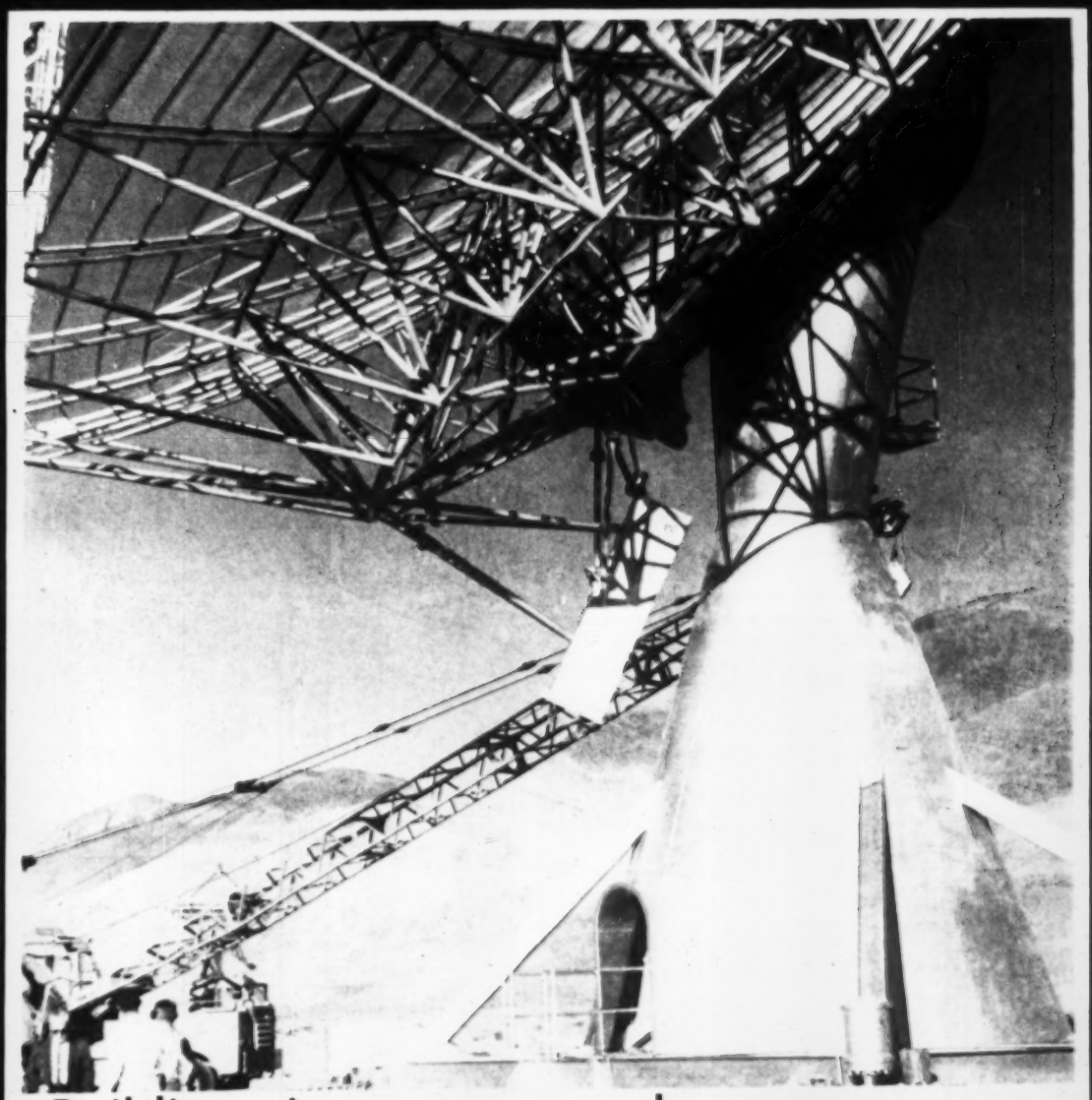
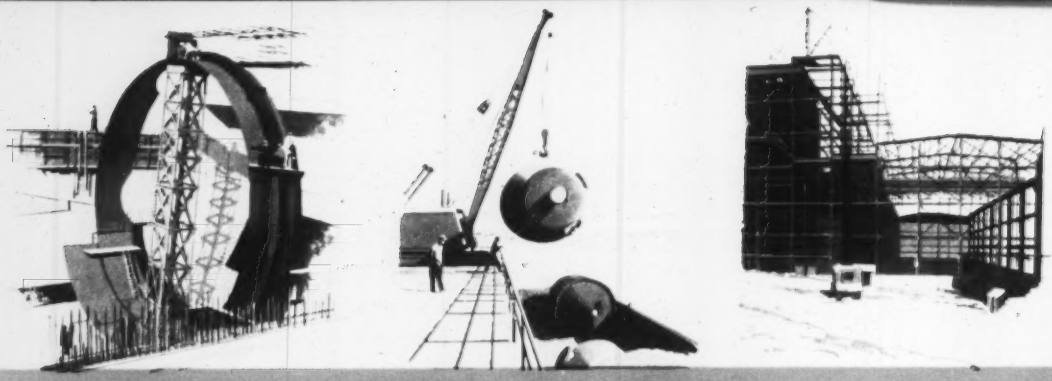
ENGINEERING NEWS-RECORD

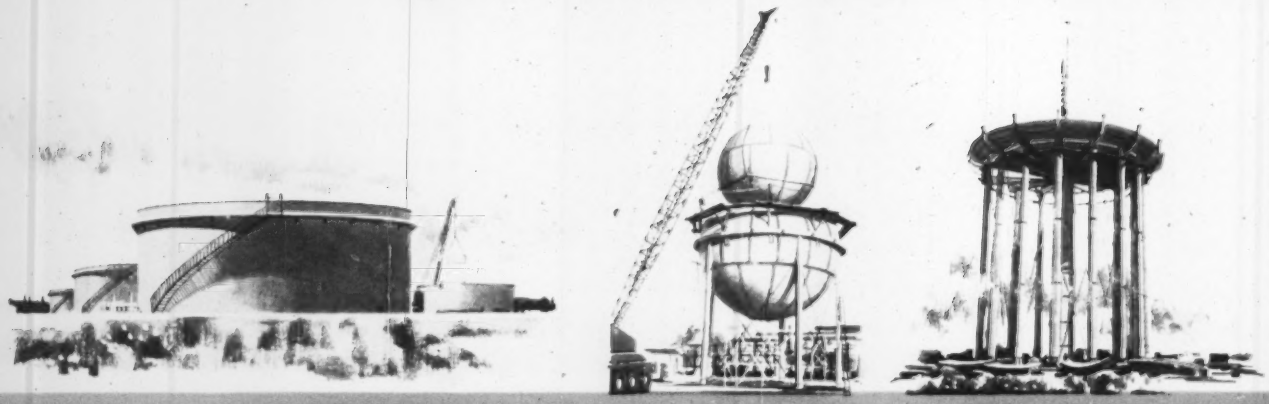


Building giant ears to probe outer space p.40

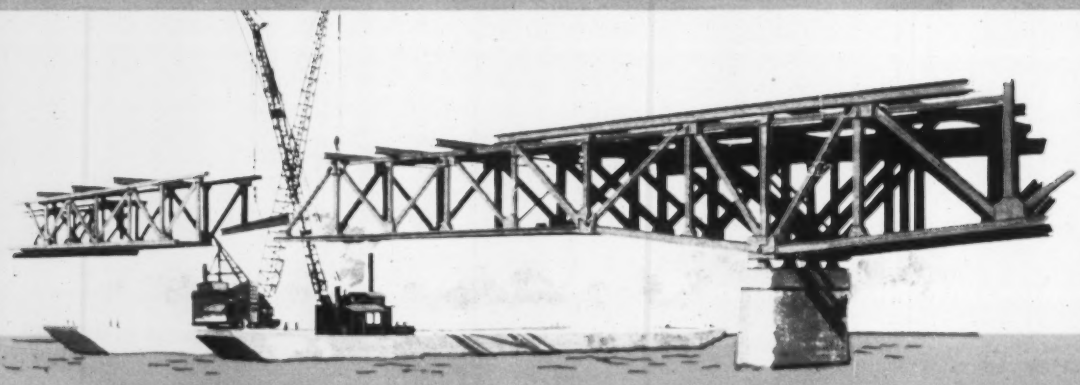
A McGRAW-HILL PUBLICATION



SKILL, SPEED AND ECONOMY



IN STEEL FABRICATION AND FIELD ERECTION . . . EVERYWHERE



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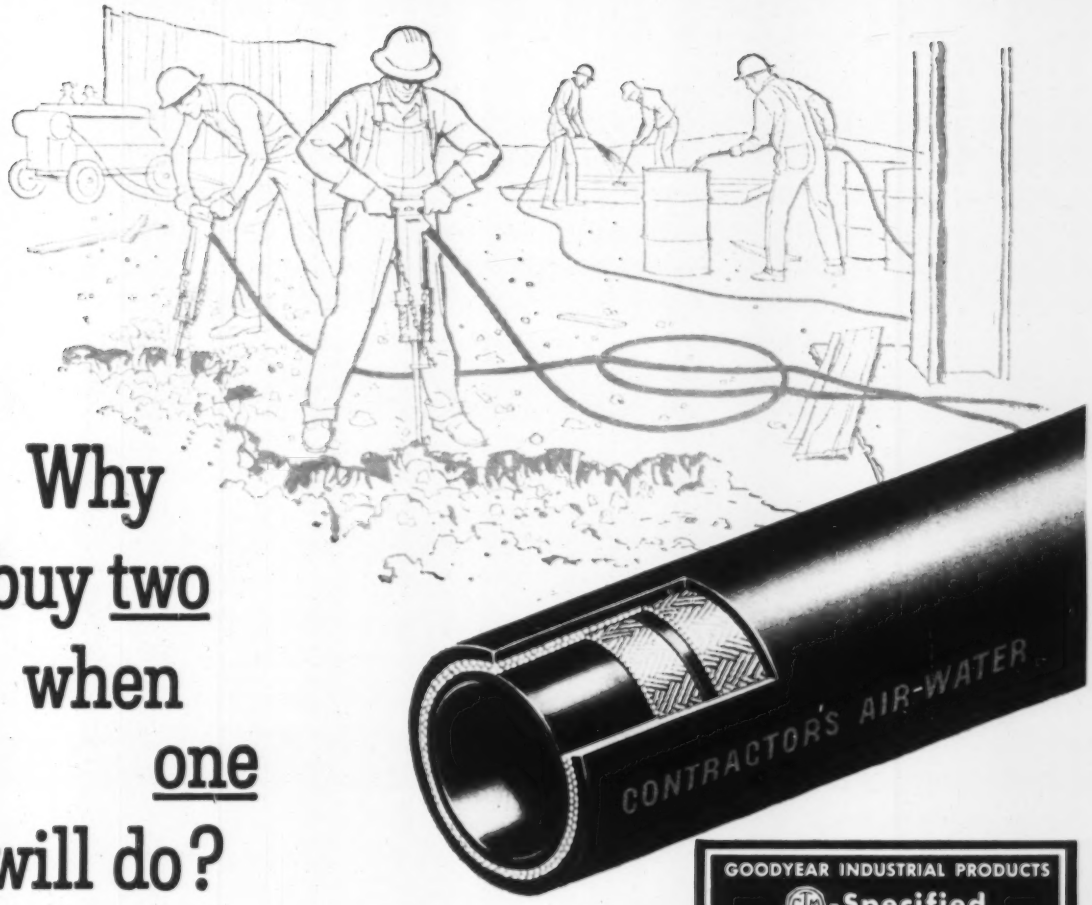

Why buy two when one will do?

Here's one hose that can handle practically every air or water assignment on any kind of construction job.

It was designed by the G.T.M. – Goodyear Technical Man – and his colleagues for air pressures up to 200 psi. Or it's an ideal water hose for filling, supplying or wash-down service.

Buy it in continuous lengths up to 400 feet (in the 1-inch or smaller sizes) and you can cut off the lengths you need – as you need them. Every piece will give you a rayon-cord-reinforced ruggedness that means extra-long, trouble-free service on even the toughest jobs.

So why buy both air *and* water hose when this one handles both so capably – and economically. Just contact your Goodyear Distributor – or write Goodyear, Industrial Products Division, Akron 16, Ohio.

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- **C** Special nonporous tube resists alkali or slightly acid water

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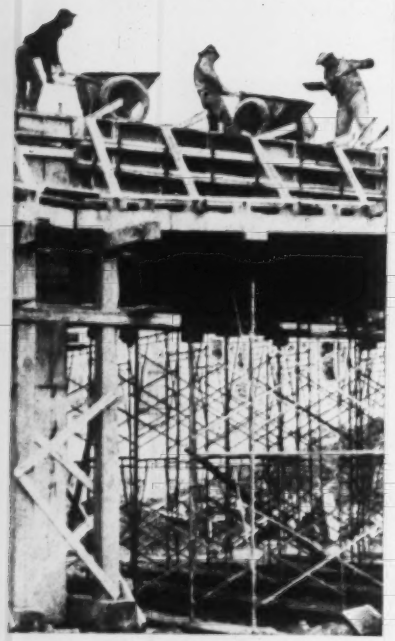

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Ease of Erecting and Stripping Reduces Pouring Time

Contractor Lee Hoffman, Beaverton, Oregon, was given 320 days to pour 4,000 cubic yards of concrete for a bridge over Myrtle Creek in Oregon. Job was complete in 220 days or only ⅔ the time allotted.

Harry Pajutte, Chief Engineer for Hoffman, credits the ease of erecting and stripping Symons Standard High Strength Forms with contributing substantially to cutting pouring time, reducing number of men required on job, and providing greater mobility for the pouring equipment. Only

JUST 3 PIECES

3,144 square feet of panels were required for the 160,000 square feet of forming.

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Always Ready to GO!

Pictured above is a 30 year old Northwest — one of several Northwests owned by the Blue Diamond Corporation of California and Nevada. Beside it is a new Model 6. In 30 years the older machine has moved millions of yards of material. For 30 years it has demonstrated that marvelous Northwest quality of always being ready to go.

Thirty years is a long time, and it's not through yet. When the Model 6 takes over, the old machine is to be mounted on concrete and is expected to give *10 years more service!* We built 'em tough in those days, but they are tougher today.

Go through the whole line of Northwest machines — any model from the big 95, 60-ton Crane to the Model 25-D! Booms — sturdier for workhorse lifting. Uniform Pressure Swing Clutches for smooth swinging and accurate spotting — cool running, trouble-free. The Feather-Touch Clutch Control with its true feel of the load. A selection of boom hoist equipment to suit every crane problem. Every advantage you need is either standard equipment or available — advantages proved in the hands of successful contractors everywhere.

Northwest dependability means money in your pocket. We hear it everywhere, and Northwest users will tell you so. Northwest's new developments will interest you. Ask a Northwest man to bring you up to date.

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NOW -FROM LINK-BELT SPEEDER... NEW **HC-78A**

changes the ground rules for 3/4-yd. truck-cranes

A ¾-YD. RATING . . . ONLY IN THE DOLLARS IT TAKES TO OWN IT! The all new HC-78A is the only ¾-yd. truck-crane with *30-ton* lifting capacity! With eight-foot overall width the HC-78A has national width and weight "permitability" . . . eliminates over-the-road travel restrictions.

MORE HC-78A ZEPHYRCRANE ADVANTAGES:

Exclusive SPEED-O-MATIC power hydraulic controls give you pin-point accuracy. Full-Function design is another exclusive feature. It offers independent, 2-directional power flow for each machine function. You can get independent power load lowering (reversing) clutches for either or both main drums; independent third operating drum; independent boom lowering clutch.

Find out how the new HC-78A handles heavier loads at extended radii . . . jibs 20-30-40 feet in length. See your distributor, or write LINK-BELT SPEEDER CORP., Cedar Rapids, Iowa.

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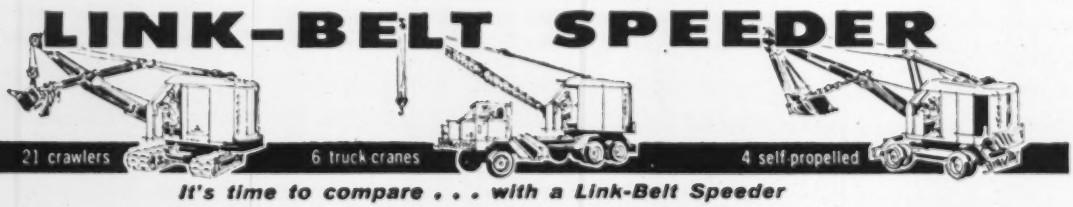
LINK-BELT SPEEDER



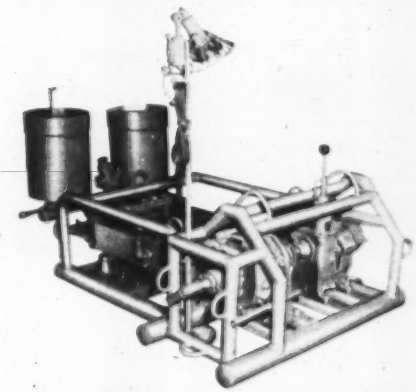
It's time to compare . . . with a Link-Belt Speeder

HALLIBURTON

GROUTING

SERVICES

complete equipment, men, and materials for any size grouting job!



THE HALLIBURTON METHOD of grouting dating back to 1930, has attained an outstanding performance record due to a constant and continued scientific research and development program in the field of grouting techniques. Through improved grouting methods, Halliburton has pressure-grouted many million sacks of portland cement and special grouting chemicals.

Halliburton's successful pressure grouting record is due to its experienced grouting engineering service personnel and the latest scientific grouting developments within its own technical development laboratory... having continuously created grouting materials and developed grouting equipment that are unique for improved grouting operations.

The Halliburton Pressure Grouting method offers some of these exclusive features:

- A dependable and convenient method of metering, mixing and placing grouting materials—continuously.
- A Grouting Pump Assembly... consists of skid mounted pump units incorporating all the pump equipment, calibrated tanks, manifolding, pressure gauge, pressure recorder, hoses and mixing jet gun.
- Pump Unit is either air motor or diesel engine driven... to conform with the availability of compressed air on the job site.
- Power Units are demountable in order to reduce size and weight of component parts for easier handling and transporting in such areas as restricted mine passages and shafts.
- Pressure gauge permits accurate control of grouting material discharge.
- Pressure recorder produces a time-pressure chart of complete grouting operation.
- The jet gun mixer, an integral part of the grouting assembly, regulates the viscosity of grouting mixture, keeping the grouting materials continuously moving.
- ***A Wider Selection of Grouting Materials***
- Halliburton offers many different types of cements for specific grouting operations.
- A great number of additives and water control agents for the improvement and modification of basic grouting materials are available.

HALLIBURTON OIL WELL CEMENTING COMPANY IS FINANCIALLY ABLE TO PERFORM ANY SIZE GROUTING OPERATION AS A PRIME OR SUB-CONTRACTOR

Halliburton Pressure-Grouting Method has been "job-proven" on:

DAMS
- Municipal dam repairs... sealing foundation leaks
- New dams... sealing foundations and forming cut-off walls

STABILIZATION OF UNCONSOLIDATED SAND AND SOIL
- Building foundations
- Compressor station foundations
- Tunnels
- Railroad railbeds
- Ground water control

MINING
- Shaft water control
- LPG storage caverns

For additional detailed information and "job experience" data about the successful Halliburton Pressure-Grouting Services, write or contact Halliburton Oil Well Cementing Company, General Offices; Duncan, Oklahoma.

HALLIBURTON GROUTING SERVICES

HALLIBURTON OIL WELL CEMENTING COMPANY • DUNCAN, OKLAHOMA

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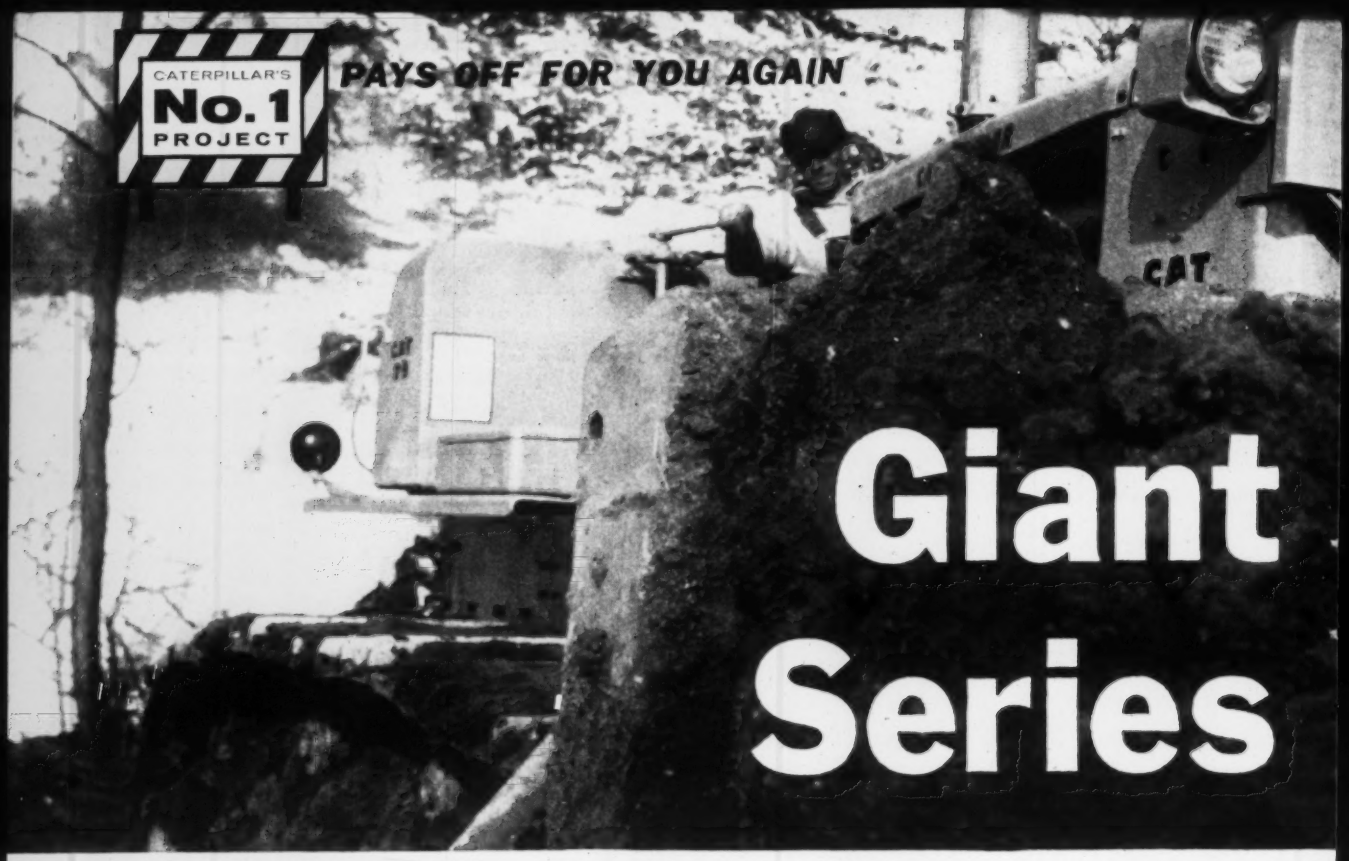
PAYS OFF FOR YOU AGAIN



Giant Series

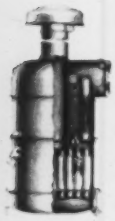
New power! New design! New features! Plus a new drive option—Cat power shift transmission! The result: higher production on any application!

Now the "King of the Crawlers" is better than ever with new pace-setting capacity for higher, faster, lower-cost production on *any* big tractor application!

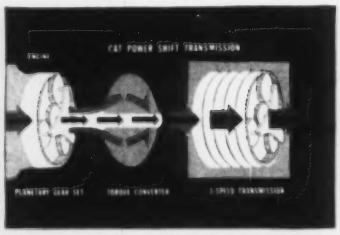
The biggest "new look" in the giant D9 Series E is the undercarriage. It's more massive . . . more rugged than ever. It'll add hours of life to running gear on even the toughest jobs. *Every* track component is new in design, highlighted by a big, new link—its pitch is increased 1¼" to 10¼"! And a new Caterpillar-developed steel alloy strengthens links, shoes, rollers *up to 40%!*

That's not all: the new D9 packs more power—335 HP. Its new equalizer bar gives greater stability on any terrain for greater operator confidence and production. A wider seat with a new spring-loaded adjustment mechanism makes the operator more comfortable, more efficient. No detail has been overlooked to make the new D9 handle heavier loads faster—and at lower operating and maintenance costs than ever.

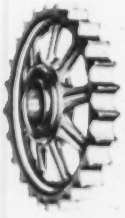
And that's not all. Now, along with direct drive and torque converter, you have your choice of the new Cat



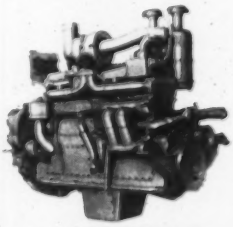
Dry-type air cleaner. Removes at least 99.8% of all dirt from intake air during every service hour. Can be serviced in 5 minutes. Reduces maintenance time and cost.



Exclusive feature. A planetary gear set splits the power from the engine. Part goes directly to the 3-speed transmission, the rest goes through a torque converter to transmission.



New sprocket. Sprocket is strengthened by new design with increased tooth thickness. Hunting tooth action provides slower wear rate.



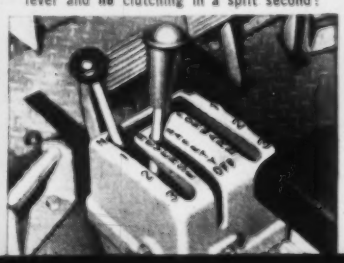
New 335 HP. More powerful than ever, the D9's Turbocharged Engine has the capacity to handle bigger loads faster, with dependability, economy.

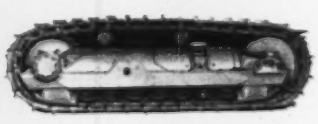
New Turbocharger. New, compact turbocharger packs more air into the engine. Open impeller wheel (shown below) helps prevent dirt build-up.

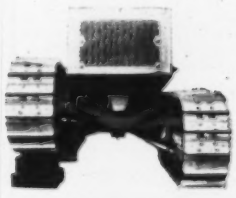
New power shift transmission. Optional on the D9. With this development you can shift **on-the-go** under **full** load with **one** lever and **no** clutching in a split second!

New, bigger, more rugged undercarriage. Major improvements in all track components add hundreds of hours of life to running gear—hours that mean more time on the job.

New equalizer bar. Greater stability. The rocking action of the bar shifts more weight to the up-hill track.







new CAT D9 E Tractor

power shift transmission. This revolutionary transmission, tested under the most rugged conditions, combines for the *first* time the positive feel of direct drive with the flexibility and anti-stall features of torque converter. With one control lever and no clutching, it reverses direction . . . changes speed . . . smoothly . . . under full load . . . in a split second!

Many of the new features, along with some familiar retained features, are shown here. Look them over. They'll give you an idea *why* the new D9 can mean higher production and more profits for you. For complete facts, see your Caterpillar Dealer. Ask for a demonstration and watch this giant eat up the work!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR'S **No. 1** PROJECT

CATERPILLAR'S NUMBER ONE PROJECT A multimillion-dollar research and development program — to meet the continuing challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

CATERPILLAR

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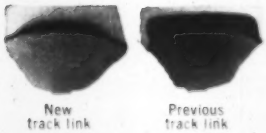
NEW D9 SERIES E— BORN OF RESEARCH PROVED IN THE FIELD

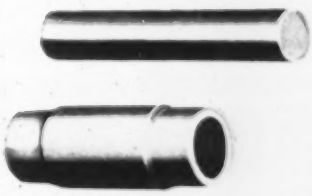


New track link — Previous track link

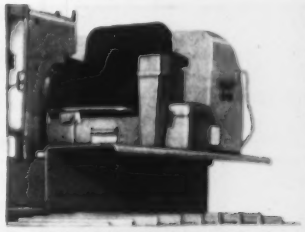
Light area at top indicates depth of hardening

New deep hardening steel. Caterpillar-developed steel alloy (plus more steel in stress areas) gives up to 40% longer life to track shoes, links and rollers.

Lifetime lubricated track rollers. Lifetime lubrication eliminates servicing problems. Oil is retained by dirt-proof, floating-ring seals.



Larger pins and bushings. Diameters are ¼" larger. Increased size reduces deflection and provides better contact along the length of the wear surfaces.



New seat adjustment. New spring-loaded adjustment mechanism provides more positive cushion and back rest positioning. Wider seat for more comfort.

Better visibility. Redesigned fuel tank gives better visibility to the rear and tapered hood offers unexcelled forward vision.

Stronger track shoes. New alloy permits deeper hardening in wear areas. Grouser height is increased ⅜" for better penetration and prolonged service life.

New foot decelerator. Provides easier machine positioning. Allows deceleration without taking hands from controls (optional on direct drive, standard on others).

Bigger, heavier track links. Strength has been added in stress areas. Pitch increase from 9" to 10¼" strengthens all track components.

Reader Comment

Robert Moses' Views on Urban Renewal

- **ENR's recent article on urban renewal progress around the country cited New York City as the leader among big cities.**
- **But Robert Moses, who heads the New York program, didn't like the article. Here's what he has to say, plus ENR's rebuttal . . .**

SIR—Your article and editorial in the issue of July 9, 1959 on the status of Title One progress throughout the country are inaccurate. While you do survey the national picture realistically and point out the tremendous lead of New York City, you do not emphasize what constitutes leadership.

For example: 1. You picture New York City as having twelve projects under way, whereas in fact New York City has fourteen projects in actual operation and two more under contract in which the property will be turned over this Fall.

(Editor's Note—*Twelve projects under way was the number reported to ENR by the Urban Renewal Administration in Washington. And the tabulation was clearly identified, "Source: Urban Renewal Administration."*)

2. You do not point out that not a single unit of partially tax abated middle income largely cooperative housing has been built in any other place in the country under the Title One program, while over 2,900 units of such middle income partially tax abated housing have been completed and are in use in the City and 8,769 additional units will be completed under the contracts with sponsors already in force and effect.

(*ENR reported, but without statistics, that New York City has provided tax-abated cooperative apartment housing.*)

3. You do not point out that New York City has an additional 4,877 units of regular fully taxable rental housing completed and in actual use with 14,642 additional units to be added as soon as the sixteen projects under contract are finished. This record should be compared with the relatively few units throughout the country.

(*Agreed.*)

4. You do not point out that in some areas, notably Chicago (the New York Life project), the largest part of the housing done was started before the Title One program was in effect and was only put under the program ex post facto after its enactment.

(*We don't think this would have added much to our story.*)

5. You do not in your survey break up the projects "under way" throughout the country so as to show those which are actually in the hands of sponsors and being redeveloped as compared to those still being held, cleared or used for public buildings. Any such analysis would show more accurately the tremendous difference between the results in New York City and those in the rest of the country.

(*The Urban Renewal Administration reported that this information was not available at that time.*)

6. You say that the method of turning the project areas over to sponsors in New York City has yet to be explained satisfactorily. The results in New York City and the tremendous lead New York City has over the rest of the country are due entirely to this method. The City takes no risks in condemning and paying for projects which may not advance. We have reliable tentative sponsors before we condemn.

I doubt whether you have a clear picture of the working of the government of a city like New York. If you had such knowledge you would know that it is quite impossible to persuade the city and federal governments to condemn fifty or sixty acres of a central run-down area like Lincoln Square costing $50,000,000, remove the population without disclosing their successors, level the buildings and then look around for plans and sponsors. A man who could do such a stunt would make Caesar Augustus, Michelangelo and Christopher Wren look like pikers.

(*Federal officials continue to view skeptically Mr. Moses arguments for staying with the practice of turning over to developers both people and property. For years they have sought a change to the method used by every other community involved in urban redevelopment: site clearance by the municipality or its redevelopment agency, then sale of the cleared land to developers.*)

7. You cite the Soundview project in New York City as one where the Washington agency stopped expenditure of planning funds involving small houses and gardens. This is a particularly outrageous and misleading distortion and pretty close to libel. The fact is that the Soundview project is one of the best projects in the City program. It is a large under-developed area on choice waterfront land where some small originally temporary summer houses were built by people not owning the land, without sewage connections and discharge individually raw sewage into adjacent river waters.

Proper development is planned for over 2,000 middle-income apartments under reliable union sponsorship headed by the United Building Trades to replace approximately 250 small individual units. This is in addition to expansion of a major waterfront park and abatement of pollution of adjacent waters. The federal government temporary order was a mistake, based on foolish allegations about the identity of the owner of record. This order will be withdrawn.

This Committee does not deal at all with the question of ownership and cannot do so. Areas for development are selected only with an eye towards availability for slum clearance and redevelopment. Condemnation and vesting of title follow only after plans are made and approved. Appraisals are made by the best firms in the City. The courts then have the duty and responsibility for awarding fair value to the owner whoever they may turn out to be.

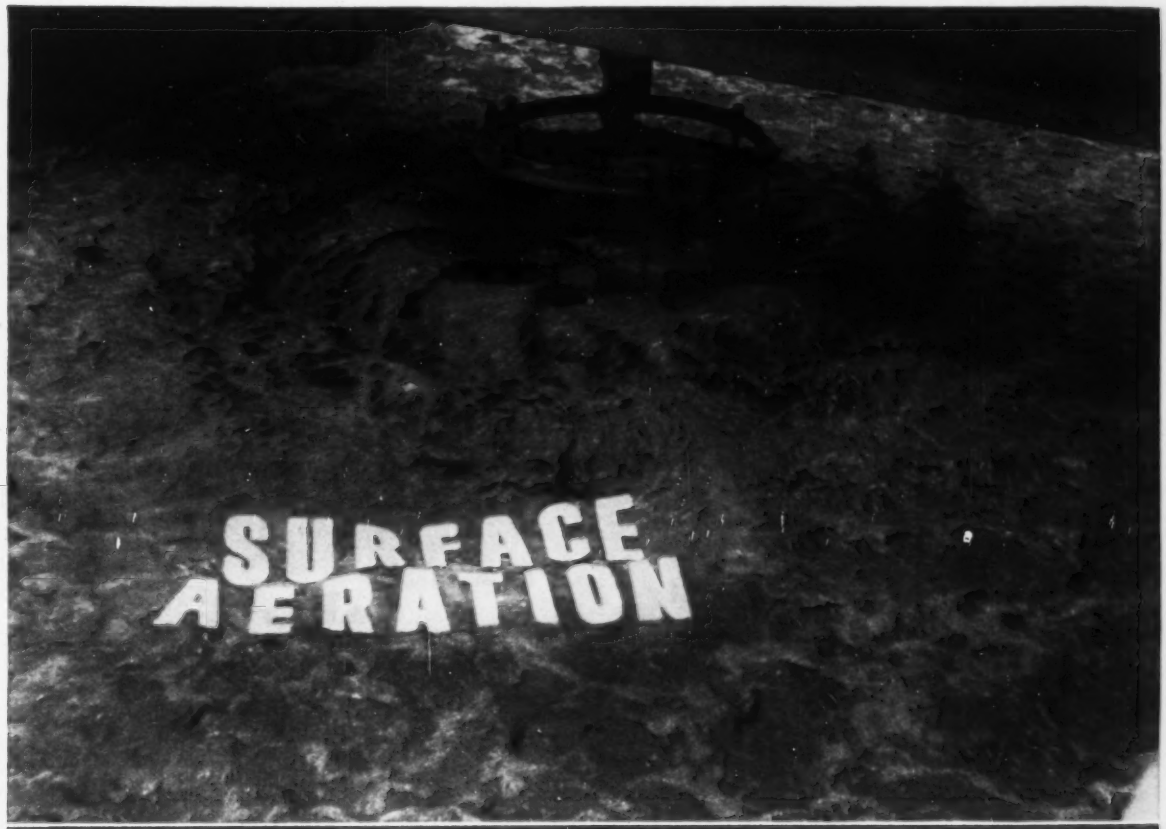
It would be impossible to ascertain hundreds of ownerships involved in all major urban projects, housing, arterial, etc., and useless to do so since such information does not affect the question of the need for redevelopment, the appraisals on which the Corporation Counsel relies in presenting his valuation, and the awards of the Court.

(*The planning funds were stopped and will remain "stopped" until the city's Board of Estimate makes up its mind on the project, says Walter S. Fried, regional administrator for HHFA in New York City. Furthermore, ENR did not take a stand on the worth or lack of worth of the proposed project.*)

8. You state that Louis I. Pokrass was an investor in one redevelopment

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

CUTS SEWAGE TREATMENT COSTS UP TO 27%



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T-5923

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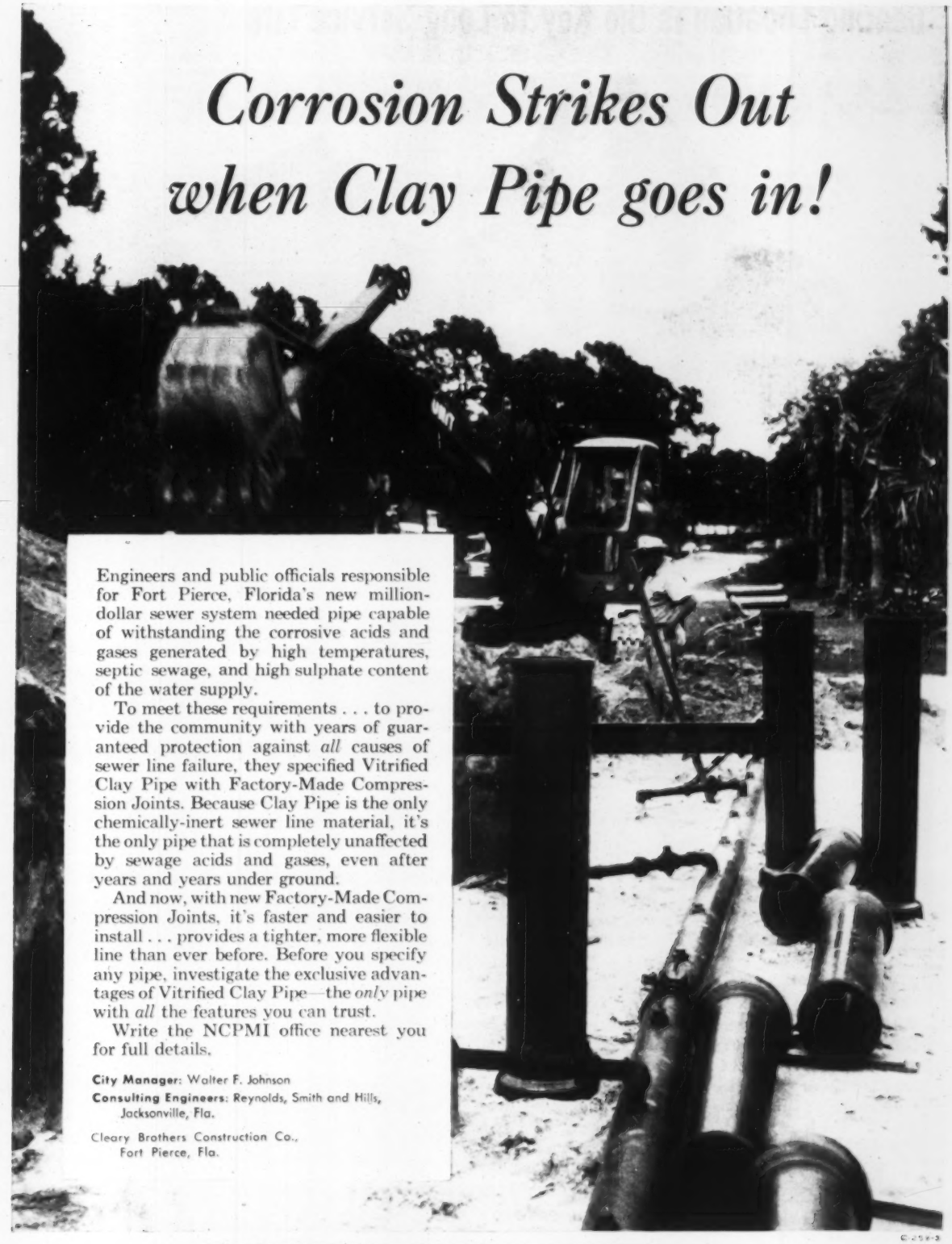

Engineers and public officials responsible for Fort Pierce, Florida's new million-dollar sewer system needed pipe capable of withstanding the corrosive acids and gases generated by high temperatures, septic sewage, and high sulphate content of the water supply.

To meet these requirements . . . to provide the community with years of guaranteed protection against *all* causes of sewer line failure, they specified Vitrified Clay Pipe with Factory-Made Compression Joints. Because Clay Pipe is the only chemically-inert sewer line material, it's the only pipe that is completely unaffected by sewage acids and gases, even after years and years under ground.

And now, with new Factory-Made Compression Joints, it's faster and easier to install . . . provides a tighter, more flexible line than ever before. Before you specify any pipe, investigate the exclusive advantages of Vitrified Clay Pipe—the *only* pipe with *all* the features you can trust.

Write the NCPMI office nearest you for full details.

City Manager: Walter F. Johnson
Consulting Engineers: Reynolds, Smith and Hills, Jacksonville, Fla.
Cleary Brothers Construction Co., Fort Pierce, Fla.

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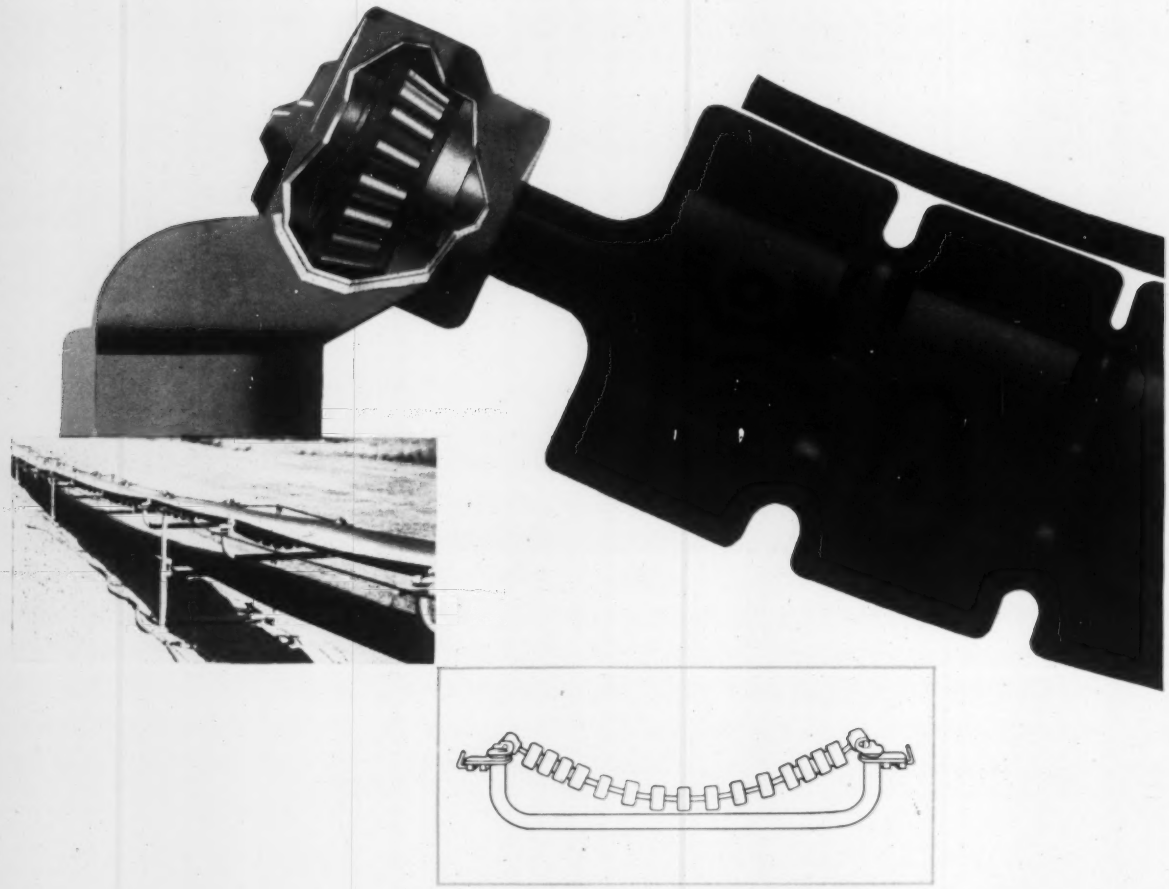
Bearing Location is the Key to Long Service Life



JOY LIMBEROLLER® CONVEYOR IDLERS

Joy Limberoller Conveyor Idlers give many times the normal service life, because the two bearings rest in slots in the support brackets—well away from spillage. On conveyor lines carrying sand, crushed rock, and other abrasive materials, Limberollers have given more than ten times the service life of steel idlers.

Limberoller Idlers consist of a neoprene coated wire rope to which are moulded neoprene discs. The ends of the rope turn in sealed bearings. This design not only eliminates clogging and freezing of the bearings, but also makes the idlers easy to service—they can be replaced while the belt is moving.

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For complete details, write for Bulletin 342-24.

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In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

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Architect: Charles F. McKirahan
Engineers: D. E. Britt & Associates
Contractor: Breakwater Housing Corporation
All of Fort Lauderdale, Florida

Adding to the list of impressive structures supported by Raymond Foundations is Breakwater Towers, a striking 16 story apartment building in Fort Lauderdale, Florida. When completed in 1960 it will provide housing, in a variety of apartment units, for several hundred families.

From coast to coast new apartment complexes and structures such as this are becoming a unique feature of 20th century life. And Raymond is playing an important role in this construction. For example, over half a million people currently live in buildings on Raymond foundations—and this figure is growing daily. If there's a foundation in *your* future, we'll be happy to talk to you.

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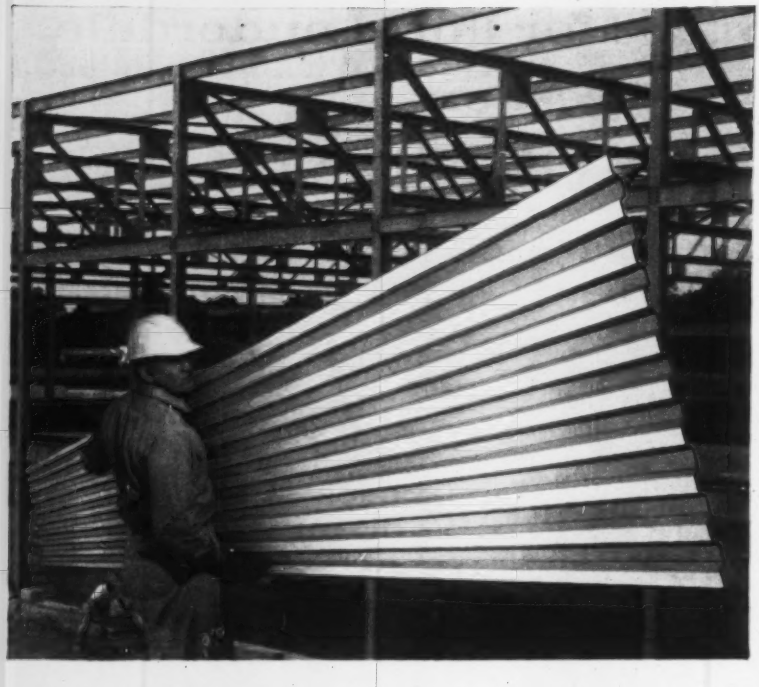

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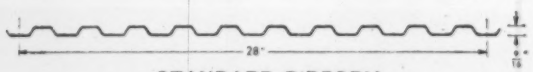
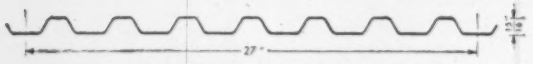
New Ribform length for quicker coverage. New super-duty weight for support over longer spans. High-tensile steel sheets, quickly welded to structural supports, provide safe working platform. You use less concrete than for flexible centering — pour and finish in one operation. Especially economical where it is impractical to strip wood forms.

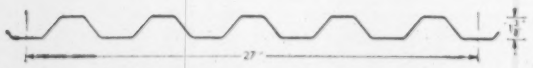
See Sweet's Light Construction File lb/In.



STANDARD RIBFORM
New length—30'0" for spans to 4'0"



HEAVY-DUTY RIBFORM
16'3" long for spans to 5'4"



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RD-33R

project. This is not the fact. The project in which Mr. Pokrass was interested never reached the stage of planning. It has already been stated to officials, and you could easily have ascertained the fact, that Mr. Pokrass was designated at a very early stage subject to investigation and final determination if and when the project advanced to actual final planning. This never happened and Mr. Pokrass never became a sponsor.

(Mr. Pokrass was designated a sponsor by the vice chairman of the Slum Clearance Committee. Tentative or not, Mr. Pokrass was ruled out after his designation became public knowledge. New York's Mayor Wagner then ordered procedural changes in the investigation and designation of sponsors, tentative or otherwise. The Pokrass case was a key factor in the changes.)

We hope in the future that you will inquire in more detail and with more accuracy and fairness into progress of this program.

ROBERT MOSES
New York, N. Y.

Moscow Dust Bowl

SIR—The dust bowl condition created by a poor concrete floor in the American exhibit at Moscow (ENR Aug. 6, p. 24) is most dramatic evidence that the concrete floors long ago grew out of the wheelbarrow and shovel category.

More than that, it shows that it takes proper methods, skill, correct materials, expert workmanship, and exacting supervision to install a long-lasting, trouble-free floor. One simply cannot mix a batch of cement, water and aggregate, pour it into a form, and miraculously get a good floor.

Frequently there is a tendency to cut corners on floors because of budget conditions—often to the regret of everyone. In other cases the floor holds up, for any number of variable factors, and the owner never knows just how close to trouble he really is. This helps sustain the myth that "all concrete floors are the same."

I doubt that everyone here in America would lay a floor in such a slip-shod way as, apparently, the Russians did. But it should serve as a warning to owners that all concrete floors are not the same.

So far the world's worst concrete floor belongs to the Russians; the next one could be American-made, and the floor wouldn't be the only thing to go up in clouds of dust; a good reputation might go along with it.

If nothing else, this incident should help make it easier for all of us in the building industry to combat the oft-stated, erroneous customer argument that "all concrete floors are the same, aren't they?"

C. FRED YTTERBERG
President
Kalman Floor Co.
New York, N. Y.

Covering Accidents

SIR—In ENR Aug. 13, p. 23, you describe two accidents that took the lives of four construction workers and injured five others.

I believe you have at least two reasons for publishing the two stories and the pictures. One being the straight news value, and the other being the hope that such reporting will help prevent similar accidents in the future. Being a safety engineer, I am vitally interested in all such instances, and hope you will continue to report them. But—please allow me to suggest that you include in each such story the cause of the accident. There was a reason why the boom buckled and wrapped itself around the building, and there was a reason why the plywood deck gave way.

With the large circulation of your magazine you have a wonderful opportunity, and I believe it to be a responsibility, to get such information to design engineers and the construction industry, and consequently aid in reducing the number of deaths due to accidents in construction. This figure was 2,400 in 1958.

SAMUEL T. LOGAN
Safety Engineer
Corps of Engineers, U.S. Army
Vicksburg, Miss.

Editor's Note: Whenever information is available on the cause of an accident, ENR publishes it. In any case, even when only a bare accident report is available, our objective is to inform and prevent recurrences, not just to present a news story. Unfortunately, the cause often isn't known for some time; in that event, we endeavor to come up with the information at a later date.

Shelters No Answer

SIR—There appears to be some effort to discourage publication of any criticism of the proposal to require all property owners to build survival shelters. For this reason I was glad to see your July 16 editorial. That had been my own reaction to the propaganda for shelters in the New York papers of July 7.

Well meant though the proposal was, it should not have given the impression that all minor details had been carefully worked out and settled once and for all. One earlier reader comment (J. C. LeDoux, ENR Sept. 17, p. 32) offers some practical information that might well have been included in the original broadcast.

Because of Governor Rockefeller's interest in the subject, I ventured to write him July 9, suggesting that it might be a bit uncomfortable for tall people like him and Mrs. Rockefeller to live continuously for two weeks with their family in an 8x8-ft room only 6 ft high.

Subsequently I discovered that Drawing No. S-O-1 of the Office of Civil and Defense Mobilization in its official 32-page pamphlet (6,000,000 copies printed) shows the room 7 ft 4 in. by 8 ft 4 in. and 5 ft 8 in. high beneath the 4x4-in. ceiling beams. This, for six persons, is 10 sq ft per person, and may God help anyone taller than 5 ft 8 in.

A 2-ft-wide baffled door is to be left open and four 4x4-in. openings are left in the base of one wall for ventilation. With a 10-gallon garbage pail for a toilet, this would be entirely inadequate.

With no electric light, running water or normal cooking facilities and no outside contact but a small radio, very few people would be willing to remain.

F. B. MARSH
White Plains, N. Y.

Right Field, Wrong Job

Here's who's doing what at O'Hare Feld, Chicago. Malan Construction Corp., New York City, is building American Airlines hangar. The construction contact for United Airlines' prestressed steel truss hangar has been awarded to William E. Schwietzer & Co., Evanston, Ill. ENR erred in reporting Malan as contractor on the United Airlines job (ENR Sept. 24, p. 31).

For Your Calendar . . .

Society for Experimental Stress Analysis, annual meeting, Pick Fort Shelby Hotel, Detroit, Mich., Oct. 21-23. Write: Society for Experimental Stress Analysis, P. O. Box, 168, Cambridge 39, Mass.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Ill., Oct. 22-23. Write: R. D. Meade, 3300 South Federal St., Chicago 16, Ill.

Cast Bronze Bearing Institute, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 22-24. Write: H. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

Non-Ferrous Founders' Society, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 22-24. Write: Herbert F. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

Acoustical Society of America, session on cavitation, Cleveland, Ohio, Oct. 22-24. Write: John Karpovich, Physical Research Laboratory, Dow Chemical Co., Midland, Mich.

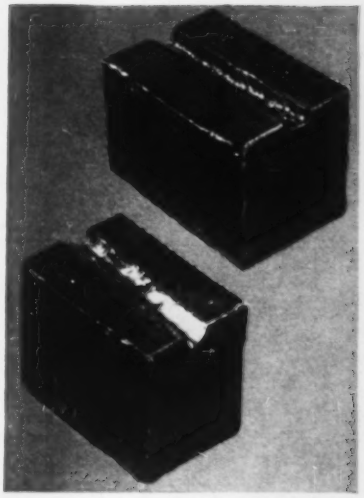
National Highway Conference for County Engineers and Officials, annual meeting, Leamington Hotel, Minneapolis, Minn., Oct. 26-28. Write: County and Local Roads Division, American Road Builders' Assn., World Center Bldg., Washington 6, D. C.

Prestressed Concrete Institute, annual meeting, Deauville Hotel, Miami Beach, Fla., Nov. 1-7. Write: Martin P. Korn, PCI, 425 N. E. Fifth St., Boca Raton, Fla.

Air Conditioning and Refrigeration Institute Exposition, Atlantic City, N. J., Nov. 2-5. Write: Air Conditioning and Refrigeration Industry, Atlantic City, N. J.

American Society for Metals' National Exposition and Congress, International Amphitheatre, Chicago, Ill., Nov. 2-6. Write: Chester L. Wells, Exposition Manager, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio.

American Concrete Pressure Pipe Association, annual meeting, The Fairmont, San Francisco, Calif., Nov. 5-6. Write: American Concrete Pipe Assn., 228 N. LaSalle St., Chicago 1, Ill.



Which stainless steel block was grooved in 12 seconds?

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HOW DOES ARCAIR WORK? The torch uses 80 p.s.i. air, welding machine current and special electrodes to melt and instantly blow away metal. There's no oxidation. New operators learn everything in 15 minutes.

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Send me more information on Arcair Torches and special electrodes.

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Cummins Engine Company, Inc., Columbus, Indiana

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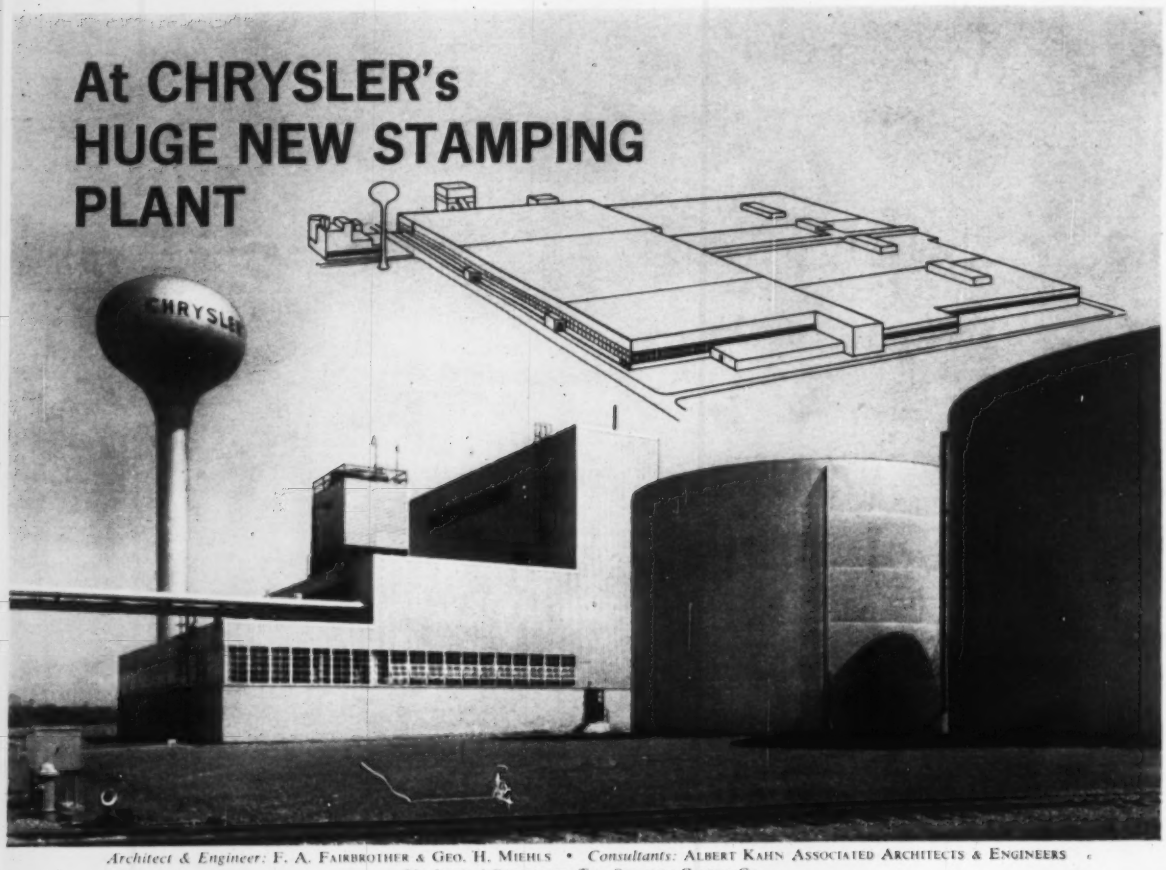

Architect & Engineer: F. A. Fairbrother & Geo. H. Miehls • *Consultants:* Albert Kahn Associated Architects & Engineers
Mechanical Contractor: The Stanley Carter Co.

JENKINS VALVES assure reliable, economical control of Production's Lifelines

Cited as one of the nation's "Top Ten Plants of the Year", Chrysler Corporation's stamping plant at Twinsburg, Ohio, is a 34-acre model of building and manufacturing efficiency.

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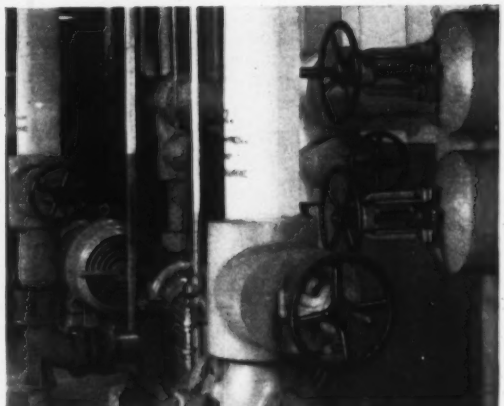
It is a highly significant fact that all building experts and operating engineers agree *"there's nothing better than Jenkins Valves"*. Many will always insist on JENKINS for critical services, and will prefer them for general use. After all, Jenkins Valves cost no more!

When you are buying or specifying valves, remember that the best valves are the best assurance of economical service. Jenkins Bros., 100 Park Ave., New York 17.



In the ultra-modern boiler house shown above, all general service valves controlling pipelines are JENKINS

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Sold Through Leading Distributors Everywhere

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Vol. 163, No. 16 October 15, 1959

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THE CONSTRUCTION WEEK

BACK IN BUSINESS—State highway departments are rushing back into roadbuilding now that they know better where they stand on federal aid for Interstate and ABC highways for the rest of fiscal 1960. Fifteen states called for bids in the last 10 days. California invited bids on $20 million worth of work, New York on $16 million. (For more on highways, see p. 26.)

FLOOD TALLY—Recent Southwest floods caused more than $47 million worth of damage. Over $30 million in damage was prevented by existing flood-control structures. Projects in the planning stage might have saved another $16 million, said Corps of Engineers.

FAILURES SPARK ACTION—Italian legislators are studying a bill that would impose a rigorous safety code on construction of reinforced concrete buildings. A series of structural failures in the past month aroused the lawmakers. An apartment house collapsed in Barletta, killing 58 persons (ENR Sept. 24, p. 30). A six-story apartment house in Rome split from roof to foundation. The ceiling of a Naples theater crumbled during a performance and walls of another structure there cracked deeply.

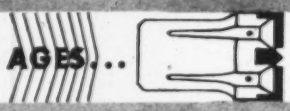
FIELDER'S CHOICE—Pittsburgh will suffer more air pollution rather than cause water pollution. Allegheny County Sanitary Authority hopes to get the third and fourth furnace of its new sewage-sludge incinerator working properly before complaints about foul odors force shutdown of units 1 and 2. Shutdown would mean temporarily dumping the plant's solids into the Ohio River.

TOWERS OF STRENGTH—California's gaudy Watts towers beat a condemnation order when Los Angeles building inspectors found the highest tower capable of withstanding winds of hurricane force. A committee of art enthusiasts paid for tests. Built over a 33-year period by an immigrant Italian tile setter, the nine towers are made of reinforced concrete and inlaid with pieces of bottle glass, tile and shells.

ECPD IN NO RUSH—Engineers' Council for Professional Development shied from a merger with Engineers Joint Council last week at the ECPD meeting in Cleveland. A spokesman cited tax classifications and bylaws of the proposed amalgamation as needing further study. A joint ECPD-EJC committee recommended the merger in principle; EJC has already expressed willingness.

REDS WON'T KNOCK WOOD—American architects who planned the U.S. exhibition at the Moscow Fair report the Russians refused to allow builders to destroy trees at the site. Contractors had to transplant the trees, build around trees, or relocate their buildings.

BIGGEST DRILLING NEWS IN AGES...



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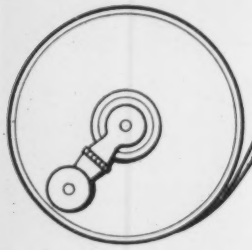

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WASHINGTON OBSERVER

- **Mortgage money gets pinched by U. S. bonds**
- **Coming up: federal public works starts**
- **Should local bonds be tax exempt?**

● **A new squeeze on mortgage financing is coming.**

The smashing success of the Treasury's 4-year, 10-month note paying 5% interest shows what lies ahead. Treasury officials were delighted with the public response. The $2-billion offering was oversubscribed five times last week. But homebuilders shopping around for mortgage money will find the search all the harder.

Here is the rough fact. A considerable amount of the money that was paid for the Treasury's offering came out of savings and loan associations and savings banks. This type of savings finds its way normally into mortgages, and, to a degree, into commercial building. But somewhere between a half billion and a billion dollars was diverted from such accounts to buy the Treasury's 5% note.

This competition for the saver's dollar is going to get even hotter.

The Treasury, for example, is now paying 3¾% on Series E Savings Bonds—more than most of the large savings and loan associations pay. Out of the 100 largest savings and loan associations, 65 were paying less than 3¾% last June, 5 were paying exactly 3¾%, and 30 were paying more.

This means the Treasury is going to attract money into E Bonds that until a few months ago was being used to finance new house construction.

—

● **New construction starts on public works will go ahead rapidly.** Interior Department expects to put out bids and awards before June 30 for most of the reclamation projects voted by Congress over the President's veto. The Army Corps of Engineers will follow suit.

Reclamation has apportioned more than half of its total budget for the fiscal year on going projects. Some $155.4 million was apportioned during the first quarter. Total budget is $277 million.

New starts being readied for contract: Trinity Dam power plant, California; Cedar Bluff project, Kansas; East Branch project, Montana; Red Willow Dam, Nebraska; Hammond project, New Mexico; Smith Fork project, Colorado; Seedskadee project, Wyoming.

A $487,500 fund to start construction on a multipurpose hydro project at Burns Creek, Idaho has been placed in reserve pending authorization by the House of Representatives, probably in the next session of Congress.

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● **Proposals to remove tax exemptions on local bonds will be considered when the House Ways and Means Committee begins hearings next month looking toward a major overhaul of the tax laws.**

But the proposals will only be discussed—legislative action, if any, will be put off until 1961.

The inquiry begins November 16. Some 25 tax questions will be discussed by professional, business and government witnesses. Some of the areas that will be discussed are special provisions for dividends, minerals depletion and business expense accounts.

US RUBBER SEARLE SLEEVES

The patented proven way to prolong conveyor belt life!

The patented Searle Sleeves are made of abrasion-resistant cushion rubber reinforced by heavy belt duck. Installation is fast, just slip them over the idler rolls. At impact points, cementing is recommended.

Build-ups of wet muck in coal mining and fines and dust in metal mining are minimized or completely prevented on belts when idlers are equipped with U.S. Searle Sleeves. These Sleeves protect idler rolls from impact damage at transfer points. Keeping idlers clean and free from build-up eliminates constant servicing, and at the same time insures longer belt life. Belt "wandering" is eliminated and edgewear greatly reduced on both belt and idlers.

• • •

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Bhakra Break Is Real Trouble

Workmen can't get at ruptured diversion tunnel—it's under 190 feet of water

Diversion tunnel failure at India's Bhakra Dam in August has left the builders facing a nightmarish situation. **Water under high head is flooding through the dam's galleries, and there is no way to shut it off, reduce the head, or even get near the trouble spot. At least no sure way.**

Harvey Slocum, American dambuilding veteran and consultant to the Indian government on construction of Bhakra, is in the U.S. checking a proposed method with experts.

The break occurred in the floor of the right-bank diversion tunnel's gate-control chamber. The chamber is 350 ft underground, just above the 50-ft-dia tunnel. Water is reaching the dam from the flooded chamber through a 300-ft-long access passage.

The initial surge of water through the dam flooded the left-bank powerhouse, across the river from the tunnel break, and drowned 10 workmen (ENR Sept. 3, p. 23). Water is still pouring into the galleries leading to the powerhouse, but most of it is being diverted from the powerhouse through openings punctured in a gallery wall.

Bhakra Dam is the key unit in India's $360-million Bhakra-Nangal power and irrigation project (ENR Dec. 11, 1958, p. 34). The accident is a blow to the region's modernization plans. Just how much of a setback it is can't be assessed until the uncertainties of repairing the damage can be dispelled.

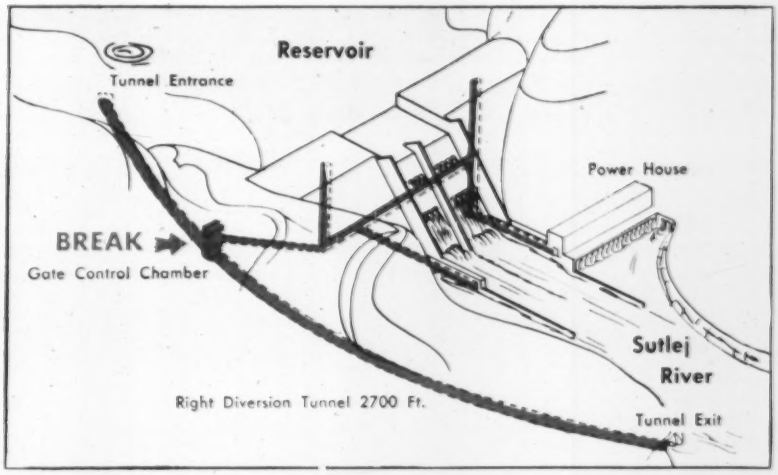
But the dam holds a much higher place in Indian esteem than its economic value alone could justify. The project has come to symbolize the country's march to industrialization and prosperity. Prime Minister Nehru himself has kept a paternal eye on it since the beginning and has personally showed it off to many distinguished visitors.

Bhakra is a concrete gravity structure. Its design height of 740 ft ranks second among the world's gravity dams, after the 940-ft height of Switzerland's Grand Dixence Dam, also under construction. Hoover Dam, 726 ft, is highest now. Up to now Bhakra has reached a height of some 500 ft.

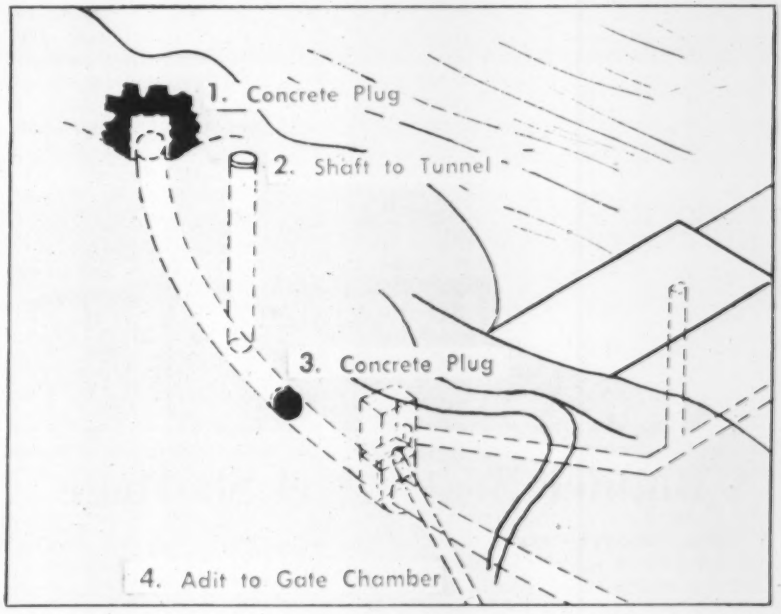
High head is the big complicating factor in any attempt at repair. The tunnel's upstream portal is about 190 ft below the reservoir surface, which makes it very difficult to shut off flow at this point. And the reservoir can't be drained because the tunnel control gates at the break are jammed nearly shut—with the tunnel floor under a 190-ft head of water.

Flow through the tunnel now is about 10,000 cu ft per sec. About 80% of this escapes from the tunnel at the break and floods the galleries. The only other reservoir outlets are temporary sluices through the dam, designed to maintain low flow downstream during the remainder of the reservoir buildup.

(*Turn the page*)



PROBLEM: Tunnel break flooded dam's galleries. Closed gates at break prevent drawdown of reservoir to reduce 190-ft head on tunnel. High head blocks repair.



SOLUTION? Dump gabions from barges to plug the intake, sink shaft to tunnel and install a second plug, drive adit to gate chamber and plug permanently.

Even if these were big enough, they are too high to draw down the reservoir.

Ironically, the diversion tunnel had reached the end of its usefulness and was soon to be plugged permanently.

Mr. Slocum's plan is to plug the intake with gabions dumped from barges; to sink a shaft to the tunnel and install another plug a short distance upstream from the gate-control chamber; and finally to drive an adit to the control chamber and plug it permanently.

The gabions will consist of jute bags of concrete enclosed in canvas and steel net. Indian Army engineers will furnish the barges and carry out the dumping operation.

The shaft would be sunk simultaneously with the dumping but could not be completed unless the dumping proved successful. Besides providing access for installation of the plug near the valve chamber, the shaft might also make it possible to help dewater by pumping if the portal closure were less than complete.

The big hazard in sinking the shaft would be in breaking through the maze of steel beams, reinforced concrete and timber supporting the roof of the tunnel. For with the reservoir level still at its present height, 140 ft higher than the tunnel roof, there is a strong likelihood that the tunnel will be under pressure.

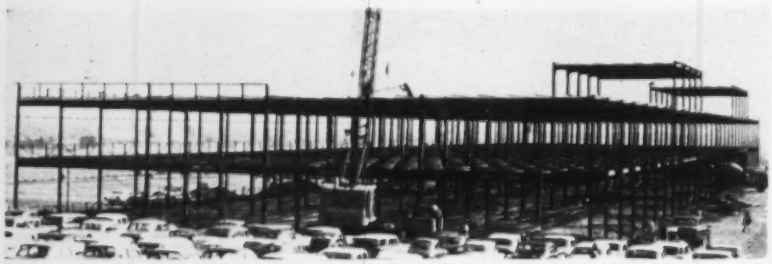
The adit to the control chamber is being driven already. This was to be done under the original plan to facilitate permanent plugging of the chamber with concrete. Now it also offers at least a faint hope that, as the tunnelers approach the control chamber, some method not now foreseeable might be found to open the gates. The adit is being driven from an existing railway tunnel used in first-stage concreting.

An alternate remedy named as a "last resort" possibility by Mr. Slocum would be to bypass the jammed control gates with a new section of tunnel. But the hazards of building it and breaking through into the existing tunnel are so great, he emphasizes, that "it is entirely too dangerous to attempt."

Too much head caused the tunnel failure, Mr. Slocum says. During his absence on a trip to the U. S. (before the current trip), the reservoir level was raised above the maximum level he had recommended. Another error in judgment brought about the great complication of repairing the damage, he says. This mistake was the decision to close the gates the day before the failure, when the control chamber showed signs of trouble.

The excessive head would have caused the failure with the gates either open or shut, Mr. Slocum says. But open, they now would permit draw down of the reservoir, which would vastly simplify the job of plugging the tunnel permanently, he points out.

If the gates had been open, he declared, draw down could be completed and the five-month job of permanent plugging started in November. Obviously it will take much longer under the existing circumstances, he points out. And the situation might easily get worse, he predicts, if the tunnel is not plugged before the 1960 monsoon.



A Builder Beats Steel Shortage

Despite the steel shortage, a contractor has just erected a two-story, 150,000-sq-ft building at what—even in normal times—would be a very fast clip. This week, just 56 days after starting the project, all 800 tons of structural steel were in place on an engineering building in Fullerton, Calif.

The builder improvised to do the job. Second floor framing required more than 200 tons of 24WF100 sections. None were available so Vinnell Steel, Irwindale, Calif., the steel subcontractor, fabricated them all from plate in its own shops.

The rest of the steel—including three miles of 12-in. beams for the floor assembly and over two miles of 9-in. channel for roof beams—came from inventory stocks and from supplies in a local steel warehouse.

Using three mobile cranes, 100 tons of steel were erected each day and the structure was fastened with high tensile bolts.

D. E. Webb Construction Co. was the general contractor. H. L. Ogerty, Hollywood, Calif. was the architect. The structure is being built for Hughes Aircraft Co.

Why Did Pontoons Sink? Scene Will Be Replayed

The contractor is going to try to recreate the night of December 27, 1958, in an effort to find out what caused two big concrete pontoons for a floating bridge to sink.

The pontoons were built for a bridge across Hood Canal in Washington State. They were later raised at a cost of $750,000 (ENR June 18, p. 44).

Aim of the tests is to prove that the contractor isn't to blame for the sinking. The contractor wants the state to pay half of the loss; the other half is covered by insurance. The state contends the sinkings were due to the contractor's negligence.

Early next summer a test pontoon will be anchored to a wharf just as it was on the night of the sinking. Tugs will tow barges up and down the stream, simulating water and traffic conditions of that night, to determine the effect of wave action on the pontoon.

A combine made up of Morrison-Knudsen Co., Henry J. Kaiser Co., Puget Sound Bridge & Dredging Co., and General Construction Co. is the contractor; Washington Toll Bridge Authority is the owner of the bridge.

New Route Will Replace Quake-Ripped Highway

The recent Montana earthquake did so much damage to Route 287 along Hebgen Lake that it will be abandoned. A new traffic link between West Yellowstone and Ennis will be built to replace it.

The earthquake had dumped parts of the highway into the lake, buried more under landslides and heaved up still more miles. Hebgen Dam was also damaged (ENR Aug. 27, p. 24).

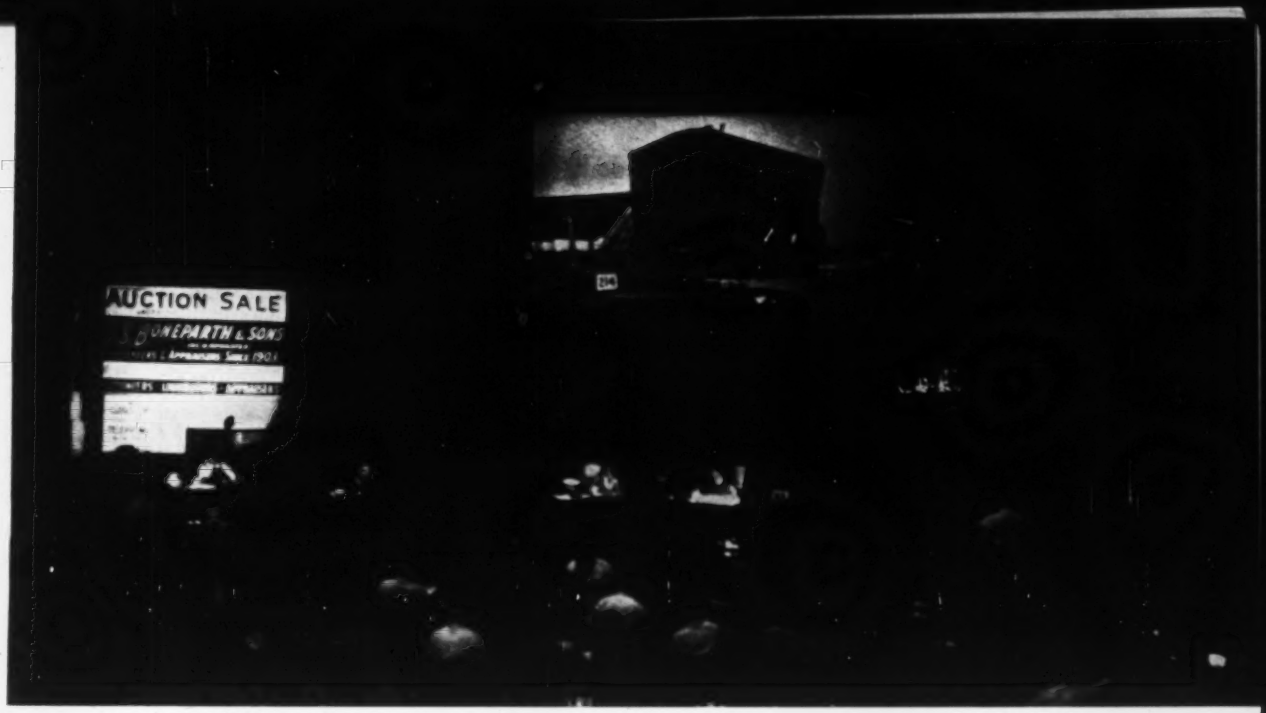
Surveyors will soon start work on the Raynolds Pass Highway, which will be 2.3 miles longer than the destroyed route.

Roofing Group to Study 'Why' and 'How' of Failures

The National Roofing Contractors Association, Chicago, has established a three part research program to study the "why" and "how" of failures. The two-year program will include:

- A study of all literature available on performance of roofing materials and related components.
- Field surveys and analysis of a number of roofing failure cases.
- Laboratory studies where necessary to amplify field study findings.

The NRCA plans to report on progress every three months. It calls the study a "definite start toward the solution of the technical problems that have plagued this industry."



'Going, Going, Gone'—by TV

"Boston bids $5,000—I have $5,000 from Boston—$5,500 from Columbus—That's $5,500 from Columbus—$6,000 from Chicago—Where are you New York?"

That was the machine-gun rattle of an auctioneer's voice filling New York City's Manhattan Center and halls in five other cities during a day-long sale of government surplus last week.

Auction sales are probably as old as man, but this one was unique. It was conducted over a closed circuit television hook-up. It pitted against each other bidders comfortably seated in Boston, New York City, Philadelphia, Columbus, St. Louis and Chicago. It displayed materials at three other locations, each in a different state. The materials ran the gamut from shoes and shirts to crushers and cranes.

Items of interest to contractors and dealers comprised 69 lots of construction equipment, which cost the government approximately $839,000. Included were headache balls, pumps, blocks and tackle, trailers, shovel fronts, clamshells, power plants, tractors, and cranes. This material was located at the Granite City, Ill., Engineer Depot, largest depot of its kind in the U. S.

As could be expected, with shipping costs such an important factor, the three Midwest cities accounted for a major portion of the equipment sales. The sparsely attended showing in New York accounted for only two sales—both to out-of-towners who had come to the city for the auction.

Here are some of the top bids on unused equipment:

- Cranes without booms, ¾-yd capacity; government cost, $21,648, per unit; five pieces bid in separately at prices ranging from $8,000 to $10,050 each.
- Scraper, 8.5-cu-yd towed-type, cable-operated; cost $9,402; sold for $3,100.
- Crusher, 30- to 40-ton per hour capacity; cost $24,460; sale price, $7,100.
- Pile driving equipment (including hammers); cost $39,303; sale price $3,500.
- Crusher, cost $66,689; sale price, $19,000.

One of the big surprises of the day stemmed from the sale of 12 used ½-cu-yd clamshell buckets. A St. Louis buyer paid $550 each for the lot—although the original cost of the units was only $892 each.

But high bids seemed to be the order of the day. The gross return to the government from the sale of its equipment amounted to $235,471. This represents a 28% recovery of the original cost. Under the usual sale procedures, the government could have expected a recovery of less than 15%.

Results of the sale were called "phenomenal" by C. C. Fisher, of the Army Property Disposal Center. He said officials were delighted with the return, pointing out that while attendance at the viewing centers was light, those who did show up were purchasers, not spectators.

The enthusiasm of the property disposal officials was not shared by many of the bidders or by all representatives of other branches of the government.

The two principal objections voiced by prospective buyers were put into a single sentence by a Connecticut dealer: "I've wasted five hours watching them sell socks and undershirts—and now the equipment prices are just too damned high."

On the first count, it was conceded by all concerned that the lumping of such a wide variety of articles in one sale was disheartening to prospective buyers.

The validity of the second complaint is a matter of viewpoint, with the buyers on one side and the seller on the other.

In general, bidders questioned seemed to prefer the sealed bid type of sale. All admitted, however, that they were surprised and pleased with the effectiveness of the display. Many bids were submitted by people who had not seen the equipment except on the television screen.

The question most often asked by viewing government officials was "Is the return going to justify the expense?" TelePrompTer Corp., which handled the televising, received $90,000 for its services. Presumably, J. S. Boneparth & Sons, the auctioneer, received a higher-than-usual fee, since it had representatives in nine locations rather than three. And the sale required the services of far more government personnel than would have been required for a conventional sale.

However, property disposal representatives, speaking unofficially, said last week's sale should be a forerunner of many more.

Highway Money: Less for the

The Money Outlook for Roads

State	What can be obligated during fiscal 1960 ABC	Interstate	Total	Obligations: Interstate, ABC for Fiscal '60	Interstate Apportionments Fiscal '60
	(in thousands)			(in millions)	
Ala.	$17,479	$34,742	$ 52.2	$ 64.6	$ 35.1
Alaska	35,961	.....	36.0	10.6	...
Ariz.	10,659	24,065	34.7	36.0	24.3
Ark.	12,553	17,494	30.0	34.5	17.7
Calif.	47,935	179,020	227.0	200.3	181.1
Colo.	13,865	13,654	27.5	40.1	13.8
Conn.	8,302	21,493	29.8	44.1	21.7
Del.	3,801	6,772	10.6	7.8	6.3
Fla.	14,428	45,648	60.1	86.9	46.2
Ga.	20,015	42,512	62.5	67.8	43.0
Hawaii	4,095	.....	4.1	5.5	....
Idaho	8,155	12,156	20.3	25.9	12.3
Ill.	38,906	90,343	129.2	169.2	91.4
Ind.	21,143	50,809	72.0	89.0	51.4
Iowa	18,463	16,719	35.2	79.0	16.9
Kan.	17,445	15,768	33.2	41.6	15.9
Ky.	15,424	30,972	46.4	77.9	31.3
La.	13,614	46,528	60.1	83.0	47.1
Me.	6,313	9,056	15.4	23.6	9.2
Md.	9,614	39,692	49.3	16.6	40.1
Mass.	16,411	49,065	65.5	82.0	49.6
Mich.	29,843	69,238	99.1	134.7	70.0
Minn.	20,883	33,209	54.1	72.1	33.6
Miss.	13,699	19,344	33.0	40.5	19.6
Mo.	23,686	50,263	73.9	77.6	50.8
Mont.	13,161	20,031	33.2	34.7	20.3
Neb.	13,901	15,324	29.2	30.3	11.0
Nev.	7,721	9,214	16.9	27.4	9.3
N. H.	4,005	9,690	13.7	27.0	9.8
N. J.	17,021	57,011	74.0	62.4	57.7
N. M.	11,497	21,106	32.6	33.7	21.3
N. Y.	56,175	87,260	143.4	197.6	88.3
N. C.	20,894	19,158	40.1	40.4	9.7
N. D.	9,418	7,804	17.2	33.8	7.9
Ohio	34,954	114,761	149.7	207.2	116.1
Okla.	16,568	16,014	32.6	39.2	16.2
Ore.	12,648	30,531	43.2	55.4	30.9
Pa.	42,604	71,845	114.4	88.8	72.7
R. I.	4,943	8,210	13.2	11.1	8.3
S. C.	11,259	14,517	25.8	44.6	14.7
S. D.	10,125	13,076	23.2	30.7	7.6
Tenn.	18,043	52,254	70.3	73.2	52.9
Tex.	51,400	79,597	131.0	185.7	80.5
Utah	8,413	16,473	24.9	39.7	16.7
Vt.	3,690	16,613	20.3	18.6	16.8
Va.	16,742	74,645	91.4	50.0	75.5
Wash.	14,043	31,905	45.9	51.2	32.3
W. Va.	9,460	22,074	31.5	59.5	22.3
Wis.	19,764	18,551	38.3	63.5	18.8
Wyo.	8,333	18,305	26.6	30.0	18.5
D. C.	5,277	17,459	22.7	10.4	17.7

Figures in millions' columns have been rounded out

Federal road money for fiscal 1960 will flow out of a smaller bucket through a carefully controlled spigot.

Commerce Secretary Frederick H. Mueller announced last week that states may obligate a total of $2.7 billion this fiscal year for both the Interstate and ABC programs. And they must make their obligations on a controlled quarterly basis to match the flow of money into the Highway Trust Fund.

The government also released Interstate apportionments for fiscal 1961. As expected, there will be less federal money than is authorized by law.

The $2.7-billion figure is $463,000 under the obligations actually made by the states in fiscal 1959, which ended June 30. Audit roughly matches the $2.727 billion obligated in fiscal 1958. New obligation controls call for the states to make frequent reports to Washington to keep obligation ABC income on a balance for this fiscal year.

"The legislation (for higher Trust Fund taxes) enacted by Congress falls short of the Trust Fund revenues envisioned in the President's recommendations," Secretary Mueller said. "However, it should be made clear there will be no interruption in the progress of the Interstate or ABC programs."

Sen. Albert Gore (D., Tenn.) immediately assailed the new controls. He telegraphed the state governors to ignore them, calling them "illegal."

Interstate apportionments have been trimmed to $1.8 billion for 1961 and to $2 billion for 1962. In each case it's $200 million less than the amount authorized by law.

Apportionments for ABC roads have first call by law on the Highway Trust Fund. No cuts can be made in these allocations so long as anticipated Trust Fund revenues cover the estimated federal share of future construction spending on these roads. Thus, apportionment for 1961 is $925 million. Congress next year will determine the ABC authorization for 1962.

Under the contract control procedure, new obligations by each state for the current year are to be committed on a timing schedule aimed at avoiding excessive demands on the Highway Trust Fund as contract expenditures become due for payment.

A state may obligate 22% of its federal allotment in the first quarter, which ended September 30; 11⅓% in the three months ending December 31, and 33⅓% in each of the two following quarters.

There are two bright features for roadbuilders:

- Two-thirds of the federal-aid obli-

States, and Metered at That

gational authority becomes available in the first six months of 1960, when highway lettings normally hit their peak.

• **State highway departments may use ABC funds for Interstate obligations, or vice versa.** The Bureau of Public Roads used regular ABC and Interstate apportionment formulas in distributing the $2.7 billion of new money. But the states can use the funds for either purpose, provided the selected projects prove out on a priority test for BPR approval.

To qualify under the contract controls plan, all projects will get special screening in BPR division offices in each state. After October 31, every federal-aid project proposal submitted by a state for approval must be accompanied by a schedule indicating by quarters the timing of federal reimbursements required to complete the project.

Each division office will maintain special control records to make sure that obligation totals do not call for future payments exceeding the anticipated federal dollars earmarked for that state. Washington headquarters will supply each state office with tentative obligation amounts for the four quarters of the current year.

These quarterly allotments will be reviewed after the Treasury, two months from now, makes new estimates of Highway Trust Fund receipts and expenditures for the federal 1961 budget. Some adjustment of the obligational authority for the January 1-March 31 quarter may be necessary at that time.

Federal-aid obligations of $2.7 billion for the current fiscal year compare with $3.2 billion of federal funds obligated by the states for ABC and Interstate projects during fiscal 1959.

One question to be answered: What happens in those states that have already obligated more than 22% of their scheduled amounts for fiscal 1960? They may have to hold up awards during November-December.

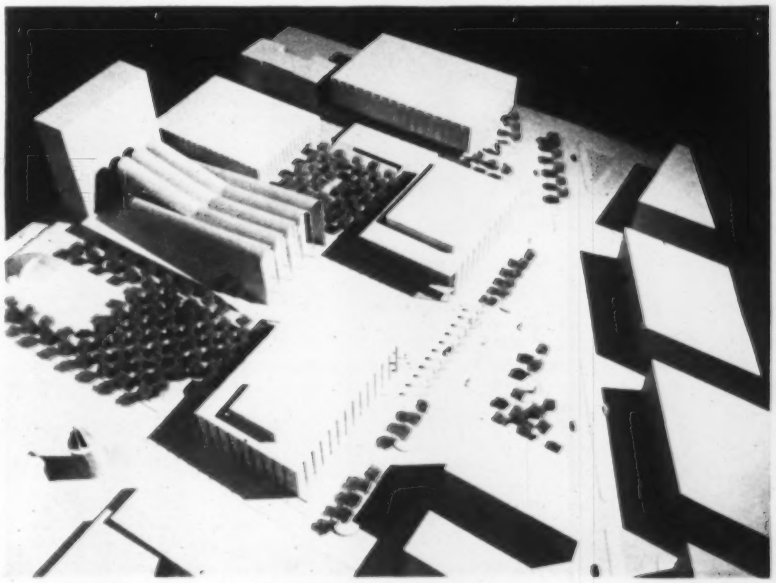
In the past, states have been willing to request the full federal obligation for an entire project, even though they intended to build it by stages (i.e., by separate, successive contracts for clearing and grubbing, grading, structures and paving). Now the states will most likely make a project out of each contract or combine them for one letting.

There has been no direct or immediate connection between federal obligations earmarked for a state's projects in any given year and the amount of federal dollars obligated by state awards of highway construction contracts in the same year.

The total of federal dollars involved in state highway contract awards last year, however, makes it pretty obvious that there will be a continued slowdown in new federal-aid construction under a $2.7-billion obligational limit for the current year.

During the 12 months of fiscal 1959, the states made federal-aid construction contract awards that obligated $2.56 billion of federal funds. The $2.7 billion allowed for this year must cover commitments for right-of-way purchase, engineering and construction contracts.

Federal-aid construction actually has been falling off since the first of the year. The drop is apparent in a comparison of the two halves of fiscal 1959. In the first half, contract awards involved nearly $1.5 billion of federal funds. In the second half—the January-June period that normally brings out the biggest lettings—federal dollars committed in new construction awards dropped to less than $1.1 billion.



New Plans for Lincoln Center

The design of New York City's Lincoln Center for the Performing Arts has been approved for location and general design, but exterior treatments of the structures are still being revised.

Clockwise from the left are the new Metropolitan Opera House, the Repertory Theater and Library-Museum, the Juilliard School of Music, Philharmonic Hall and (across the plaza) the Theater for the Dance.

A new model of the project went on display last week. It differs from earlier plans in the following respects:

• The Repertory Theater and the Library-Museum are now combined in a single building in the northwest corner of the site. This change creates a large, open, tree-shaded square.

• The Juilliard School's modified design completes the square surrounding the grove.

• Porticos were added to the facade of Philharmonic Hall and the Theater for the Dance, which front the main plaza.

• A tower has been added at the far end of the Opera House. It will house rehearsal halls, workshops, and air conditioning equipment for all the theaters.

The model does not show the underground roads that will lead to all of the buildings and to an 888-car underground garage to be built and operated by the city.

Excavation is now beginning for Philharmonic Hall, first of the buildings to be constructed.

Harrison & Abramovitz, New York City, are the chief architects for the project. Fuller-Turner-Walsh-Slattery, New York City, is the general contractor.

Ammann & Whitney, New York City, are the structural engineers for the Philharmonic Hall and the Opera House. The entire project will cost between $60 million and $100 million.

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Can Concrete Meet Earthquake Code?

The cement industry is trying to prove that multistory reinforced concrete structures can be designed with desirable earthquake-resisting properties.

The industry's efforts are in response to a challenge from the Structural Engineers Association of California, which recently adopted an earthquake code that tends to exclude any framing material except steel for tall buildings (ENR March 19, p. 56). Some California communities are thinking of adopting the code.

The code at first stated that buildings more than 13 stories, or 159 ft, high shall have a complete moment resisting steel frame, capable of resisting not less than 25% of the required seismic load for the structure as a whole.

Following complaints by the Portland Cement Association the word "steel" was deleted and the following sentences added:

"The frame shall be made of ductile material or a ductile combination of materials. The necessary ductility shall be considered to be provided by a steel frame with moment-resistant connections or by other systems proven by tests and studies to provide equivalent energy absorption."

It was this last sentence that prompted PCA to begin a special study on the resistance of reinforced concrete structures to dynamic loads imposed by earthquakes.

The cement association is:

- Retaining structural engineering experts as consultants.
- Studying available research data.
- Conducting theoretical studies and physical research.
- Preparing a comprehensive manual on the design, detailing, construction and inspection of multistory concrete buildings subject to earthquake motions.
- Conducting a series of educational courses.

Announcement of the study was made at the October convention of the Structural Engineers Association of California. Nathan A. Newmark of PCA told the group that shear reinforcing is of first importance. Failure due to inadequate shear reinforcing is more sudden and has far less energy absorption quality than other types of failure.

These thoughts were echoed by John A. Blume, who discussed practical aspects of designing reinforced concrete structures for earthquake resistance. Reinforced concrete can be made ductile, he said. But merely providing excess material doesn't necessarily help earthquake resistance. For example, over-reinforcing may force the concrete to be crushed under earthquake forces rather than effecting desirable and economical yielding of the reinforcement to meet such severe emergencies.

Mr. Blume also warned against steel congestion at joints. He urged that drawings be complete and that engineers give top priority to review of shop drawings, bending diagrams and placement diagrams.

Meanwhile, the new code has been printed and is ready for limited distribution by member associations. The state association is now working on a "Manual of Standard Practice in Seismic Design," which will provide background to the code.

Around the Country . . .

• Conversion site picked—The West Coast sea water conversion plant will be built at Point Loma, near San Diego, Calif. The plant will produce fresh water at 1-million gallons per day using the multistage flash distillation process. Fluor Corp., Los Angeles, holds a $102,000 contract for design of the conversion plant (ENR Oct. 1, p. 23).

• Expensive gardening—The New Jersey Highway Authority reports an expenditure of $7.7 million over the past seven years for beautification of the Garden State Parkway. Expenses included fertilizers, soil treatments, seeding and planting of trees.

• Low cost housing—The Memphis Housing Authority has awarded a $2.95-million construction contract for 320 units of public housing. Cost comes to $9.29 per sq ft for the 318,000 sq ft involved. The two- and three-floor buildings will be lift-slab construction.

• New Penn bridges—The Pennsylvania Department of Highways signed contracts with a total value of $62,300 with five consulting firms for design of 18 bridges that will replace obsolete spans. Six of the bridges to be replaced are wooden covered bridges.

• New Card stadium—St. Louis' Civic Redevelopment Co. plans to build a $22-million stadium for the St. Louis Cardinals and is considering a $59-million office-garage-hotel development.

• Probe findings withheld—New York State's legislative investigation into state use of consultants (ENR Feb. 26, p. 100) has been completed at last. But findings are being withheld. Chances are they won't see light of day until the legislature reconvenes in January. There is reportedly nothing in the findings charging malpractice by consultants or the Department of Public Works.

Foundations Set the Pace At Throgs Neck Bridge

Throgs Neck Bridge—latest addition to New York City's necklace of bridges—is progressing well ahead of schedule. Merritt-Chapman & Scott Corp., one of 10 contractors on the project, reports that its share—38 water piers and the two tower bases—will be completed nearly six month sooner than had been originally scheduled.

The north tower, nearest the borough of Bronx, has been topped out by Bethlehem Steel. The south tower is about 80% complete.

Barring steel shortages that up to now have not slowed the job, the Triborough Bridge and Tunnel Authority should be collecting tolls well in advance of its expectations.

Nearly a dead ringer for the neighboring Bronx-Whitestone Bridge, the 2,910-ft suspension span will connect the easternmost tip of New York City's borough of Bronx with the sprawling network of parkways in Queens.

Engineers Invite Bids on $46-Million Titan Base

Bids will be called late this month for construction of underground launching facilities for nine Titan intercontinental ballistic missiles in the vicinity of Larson Air Force Base, Moses Lake, Wash. The Walla Walla District Corps of Engineers estimates the value of the work at $46 million.

Launching sites that will accommodate three missiles each will be built at Warde, Beverly and Ruff, Wash. Each site will have underground silos to house three Titan ICBMs and, also underground, a powerhouse, control center, fuel storage tanks and two antenna silos.

Bidders will be allowed to figure any or all of the work at each of the three sites. Work is scheduled for completion in 18 months.

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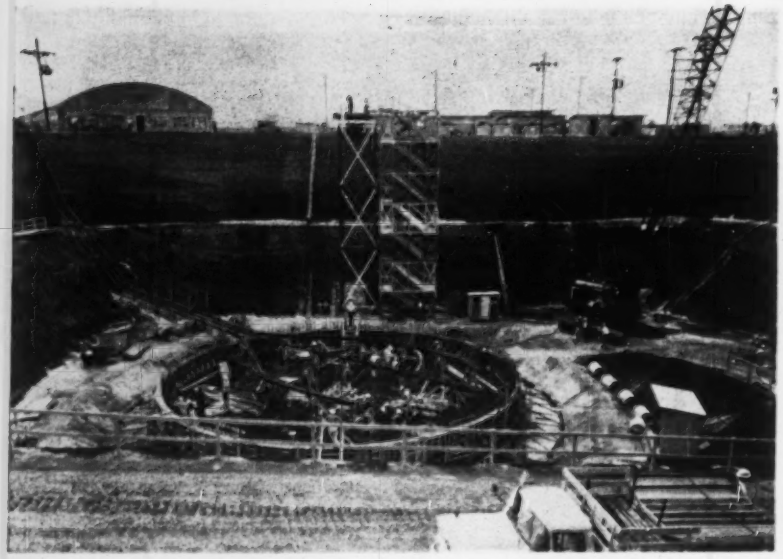
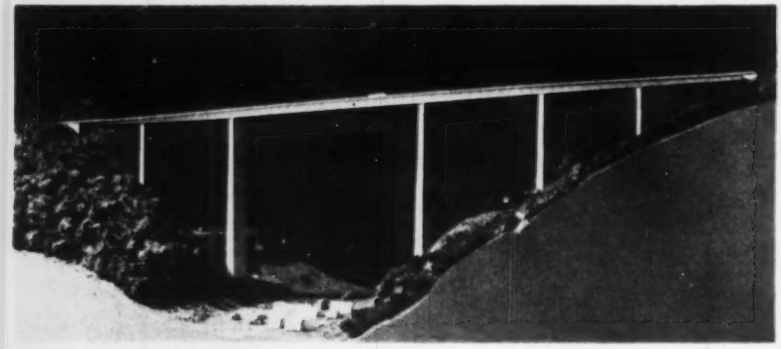


Foundations Grow for Reactor

Crews are preparing to cast the concrete foundations for a test reactor at the Atomic Energy Commission's Savannah River plant near Augusta, Ga. The $8-million reactor, employing heavy water moderating components, is set for completion in January, 1961.

Departing from the usual pattern, the reactor structure will be cylindrical with a hemispherical top. It will be 125 ft high. The 80-ft-dia container will extend 60 ft below finished grade, hence the pit work area. Above grade, the containment vessel will be steel; below grade, 18-in.-thick reinforced concrete. Chicago Bridge & Iron Co. will fabricate and erect the steel portion of the vessel. E. I. DuPont, the general contractor, is doing all other construction with its own forces.

Excavating crews cut the pit area with sloping banks. This eliminated the need for sheeting and provided unconfined work space. A sprayed asphalt emulsion covers the banks to stabilize the slopes and prevent erosion.



Builders spanning Sill River valley will use a . . .

Box Girder for Europe's Highest

"Europebruecke," Europe's highest bridge, will be part of a new autobahn connecting Innsbruck, Austria, with Italy's road net south of the Brenner Pass.

The 2,296-ft-long bridge will span the Sill River valley. Its highest point will be 590.5 ft above the small Sill River.

The 679-ft-long center span of the six-span bridge will sit on two piers—one 492 ft high and the other 459 ft high. Other spans include three 266 ft long and two 354 ft long.

A steel-plate box girder, 33-ft-wide and 23-ft-high, will span the piers. This will carry two 26.57-ft-wide roadways separated by a 3.28-ft grass median.

The bridge will cost $3.6 million—with $1.3 million going for the substructure. It is expected to be finished at the end of 1961.

Chicago Airport Gets Set For Jets to Europe

Construction of a $4.4-million runway extension and facilities will permit jet aircraft to make non-stop flights from Chicago's O'Hare International Airport to the major cities of Europe by Christmas.

S. J. Groves & Sons Co., Springfield, Ill., submitted a low bid of $4,427,000 for lengthening an existing 8,838-ft runway to 11,600 ft. A provision of the contract requires completion of the extension within 62 days of the award.

The present jet runway at O'Hare handles an average of 32 flights per day. But those crossing the Atlantic must refuel at some intermediate point. The proposed 11,600-ft runway will enable jets to take off with enough fuel to carry them to western and central Europe.

Other items in the contract include a 4,700 ft x 75 ft jet taxiway, a 1,500-car parking lot, an access road to fuel storage facilities, a holding apron, and runway lights.

Baltimore Plans Expansion For Friendship Airport

Baltimore's Airport Board has approved a $20-million expansion program designed to fit Friendship International Airport for the jet plane requirements of the next 10 years.

Major construction projects for Friendship will include two long piers for passengers to walk to and from planes and the terminal building, and a 11,000-ft runway. The piers will cost $4.9 million and the runway $9.5 million.

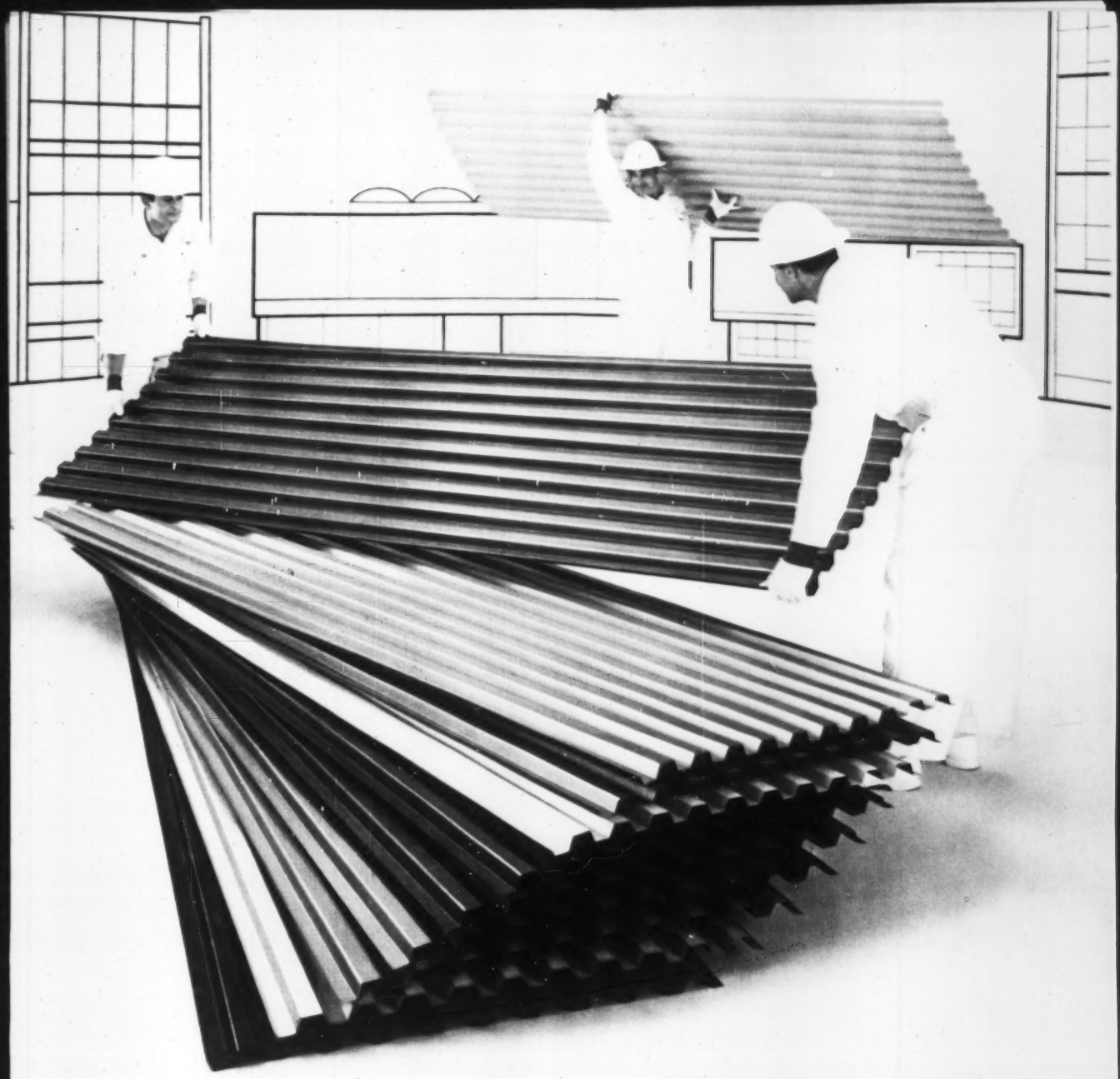
The program is subject to the approval of Baltimore's Board of Estimate. It calls for the sale of $11 million in airport serial bonds for partial financing of the project. Friendship International Airport was completed in 1950 at a cost of $5 million.

Buffalo Ordinance Aims At Fire-Damaged Buildings

Buffalo, N. Y., hopes to spark its city-wide cleanup campaign with an ordinance that would give the city the right to force repair or demolition of burned out or dilapidated buildings.

The Department of Public Works plans a measure that will allow for liberal interpretation, since fire damage can be deceptive. A spectacular flash fire may cause only superficial damage, while a small but very hot fire can inflict severe structural damage.

To be considered dilapidated, a structure will have to be about 50% destroyed, according to the new regulation. The city's building department will judge the amount of damage.



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Open Web Beams Save $200,000

Two unusual structural methods brought savings of more than $200,000 in the $10-million Washington Building in Seattle. The methods:

- Split beams rewelded with large web openings.
- Full shoring for the slender beams until concrete floor slabs gained strength for composite action.

Open-web beams, weighing about two tons each, span the entire 56-ft 4-in. width of the office tower, which is 235 ft long. The beams are spaced on 9-ft centers.

Reinforcing bars welded to the top of each beam extend into the floor slab—making the beam composite with the slab. The floor acts as a diaphragm, transmitting lateral forces to concrete shear walls at the ends of the building and at the center core.

Here's how the job was done.

The split beams were shop-fabricated from 18-in. WF beams cut lengthwise in a zigzag fashion. These halves then were welded together to produce a 27-in. beam with hexagonal openings. The seven openings near each end of the beams are stiffened; the 10 midspan openings have no stiffening. A 6½x1-in. cover plate is welded to the bottom flange of each beam.

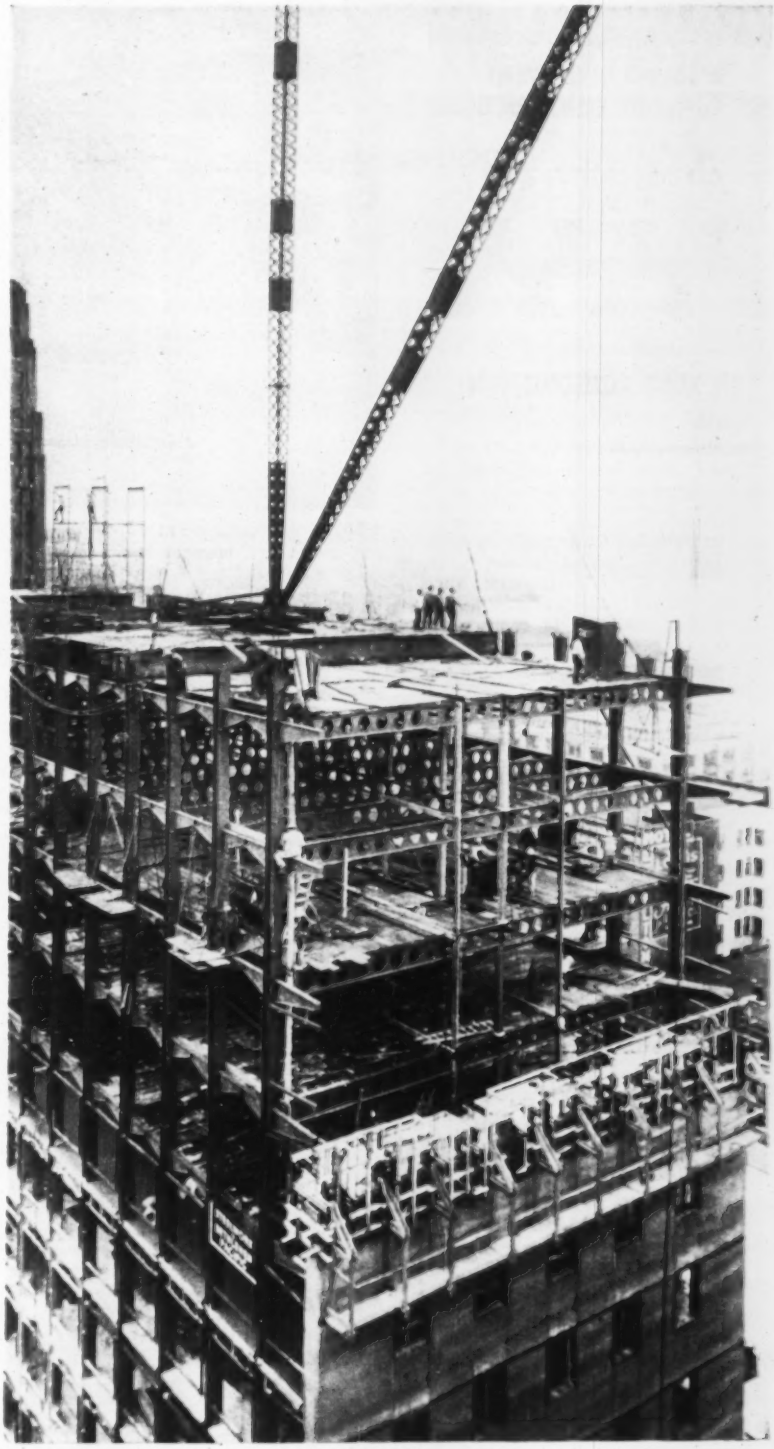
The open-web beams enabled the designers to reduce the floor-to-floor height by routing all utilities through the openings. Distance from floor to floor is 12 ft; from floor to ceiling, 9 ft.

The split beams weigh only 70 lb per ft, compared to 145 lb for conventional beams of the same depth. They are supported at either end by 14 in. WF steel columns.

Shoring was required for at least 12 levels of beams during construction to permit the floor slabs to gain strength for composite action with the slender open web beams. The open web steel beams were shored at midspan by 10x10-in. timbers. (8x8 timbers were used until some failed.) The shores were jacked by 50-ton jacks to provide ½ in. camber for floor slab casting.

Spandrels also were made of split beams. They were shop fabricated from 16-in. WF beam "split" lengthwise on the diagonal and the halves welded together to form a tapered spandrel 24 in. deep at one end and 8 in. deep at the other, thus saving on steel. This extra depth in the spandrel eliminated the need for stiffeners in the columns; it made it possible to put air-conditioning pipes in the space within the column.

Columns are 14-in. WF members; a typical column varies from 264 lb down



Seattle Building is framed with split and rewelded beams.

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BEAMS were fabricated to 27-in. depth by splitting 18-in. members in a zigzag pattern and rewelding. Makeshift beams weigh only 70 lb per ft.

to 43 lb. The spandrels were welded to the columns in the shop and bolted at midspan on the job.

Three garage floors and the first floor office level are supported by prestressed concrete beams that are also 56 ft 4 in. long. A typical prestressed beam is 30 in. deep and 10 or 12 in. wide. The heaviest beams weigh 10.7 tons as compared with 2.2 tons for the split steel beams.

The steel frame was erected at the rate of one story every three or four days. Two guy derricks, each with 110-ft mast and 100-ft boom were used. As the open web beams are not strong enough to support the derricks, the machinery was mounted on temporary 36-in. 128-lb WF beams bolted to the columns.

Slip forms were used on the concrete shear walls and the walls of the central core. These forms not only permitted the placement of concrete at the rate of 12 ft of wall per day, but eliminated the need for 168,000 sq ft of conventional forms. The forms were raised by hydraulic jacks at the rate of 6 in. an hour, thus covering the 3-ft height of the form in about six hours.

Concrete was poured around the clock, three to five stories at a time within six weeks of steel erection. Power buggies transported the concrete from a hopper to the walls, over a platform attached to the traveling forms.

The building was planned on a 4½-ft module. This dimension allowed greater flexibility and economy than was believed possible with a larger module. Individual offices can be held to a 9-ft width using two modules, or 13½ ft using three modules. Further flexibility is obtained by placing office partitions at any point on the 2-ft-wide columns.

The location of the 72x33-ft central core, which extends 10 ft out from the face of the office tower, was dictated by inclusion of a 350-car garage in the four-story base of the building. The core extends 23 ft into the building to a central corridor.

The garage is the continuous-ramp type; its slope is held to a maximum of 4 deg along the 235-ft length of the five levels. Tenants will be able to park their own cars at a 53-deg angle. The building base includes, in addition to the garage, a new Seattle main post office, already completed.

A landscaped garden at the building's main entrance, on the east side, will be flanked with retail stores on two levels. Dark construction materials on this section contrast with white marble facing the office tower. The marble is in panels 2-in. thick, applied to a reinforced concrete slab 2½-in. thick, to form 7x6-ft composite panels.

The building was designed by Architects Naramore, Bain, Brady & Johanson of Seattle. Worthington, Skilling, Helle & Jackson of Seattle were structural engineers for the office tower and garage. Lloyd W. Johnson Co. of Seattle and Morrison-Knudson Co., Inc., Boise, Idaho, hold the $6,782,000 general contract. Bethlehem Pacific Coast Steel Corp. fabricated and erected the steel.

ALPHA

BETTER CONSTRUCTION THROUGH
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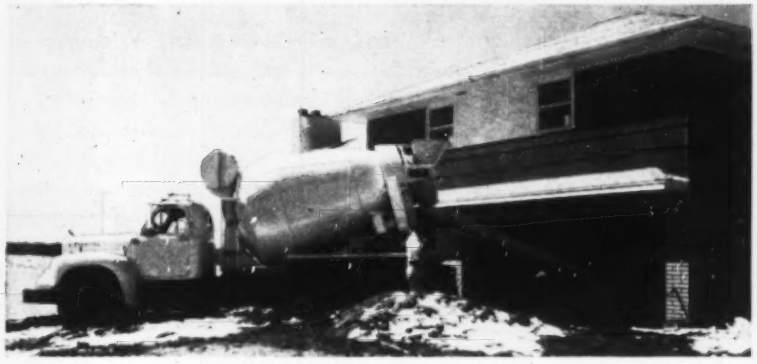
news and notes from the field

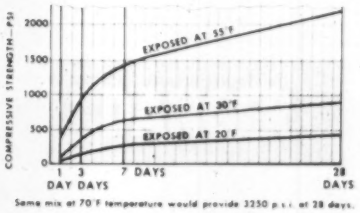
Tips For Cold Weather Concreting



Cold weather need not interfere with your concrete construction progress. Concrete work of all kinds has been done in extremely cold weather, and winter concreting can be of equal or even better quality than that placed in warm weather. Certain precautions must be observed, however, and an understanding of the effects of low temperatures on new concrete is necessary.

Effects of Low Temperatures

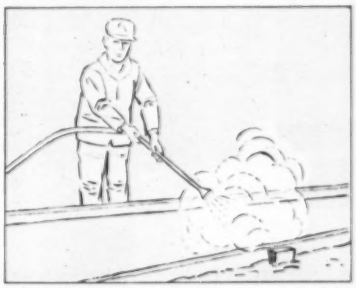
Low temperatures retard the rate at which concrete hardens and gains strength. Near 32°F. the rate is very slow, and below freezing there is almost no increase in strength.



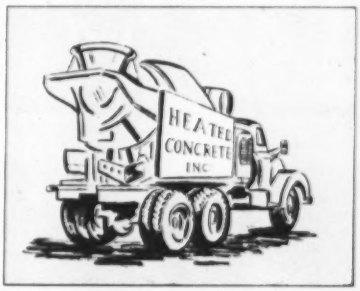
Same mix at 70°F temperature would provide 3250 p.s.i. at 28 days.

Concrete gains strength slowly at low temperatures. To obtain the given design strength in severe weather, additional cement or high-early strength cement may be necessary.

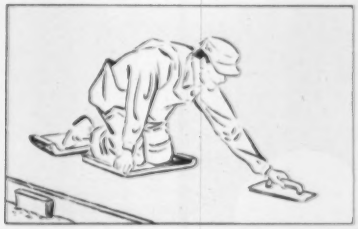
Precautions



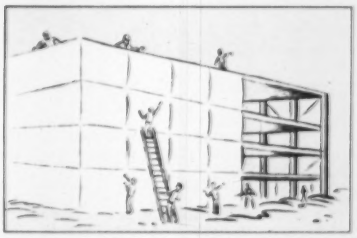
Subgrade must not be frozen or muddy. Remove all ice and frost from inside the forms and from reinforcing steel. This is best done with live steam.



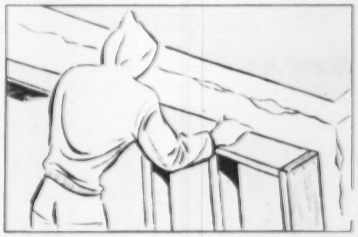
Use heated concrete when air temperature is expected to be 40°F. or lower within 24 hours of placing. Temperature of heated concrete should be at least 70°F.—*never* above 80°F. (Mass concrete excepted.)



Delay final finishing of flat surfaces to allow for slow set when using cool concrete. Too early final finishing causes dusting.



Concrete must be properly placed and protected for at least 72 hours even though heated concrete is used.



Leave forms on longer in colder weather. Never continue stripping forms if concrete is marred as removal is started.

"Antifreeze" Mixtures

There are no known compounds that can be used in sufficient quantity to prevent concrete from freezing without harming the concrete itself. It is recommended that calcium chloride—which accelerates strength gain—should not be used in excess of 2% by weight of the cement. The chloride should be dissolved in water before use.

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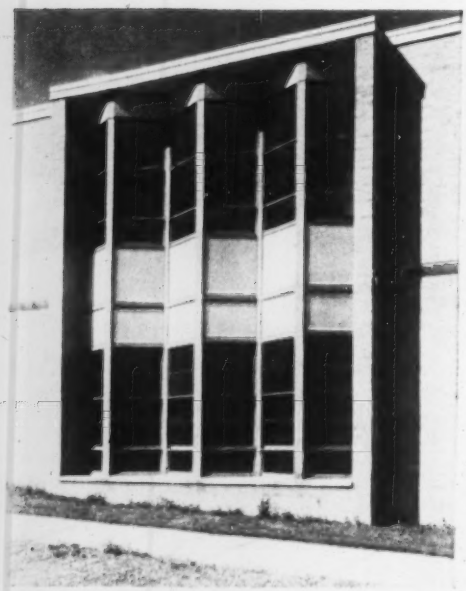
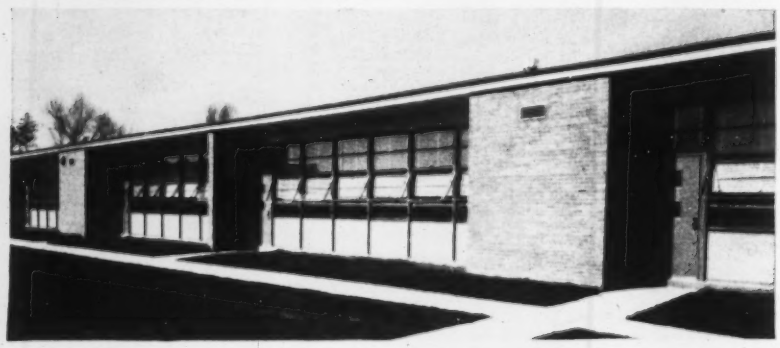


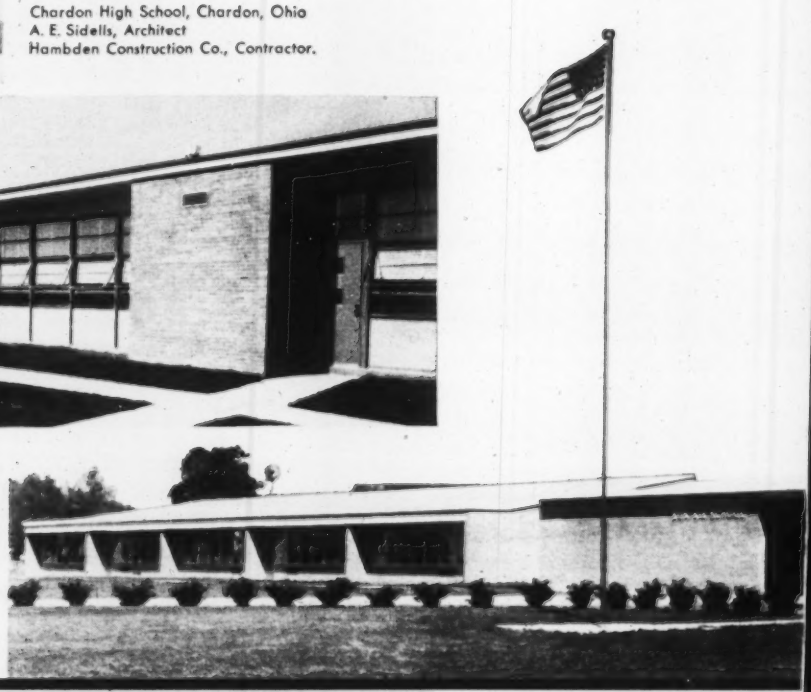
HIGH SCHOOL

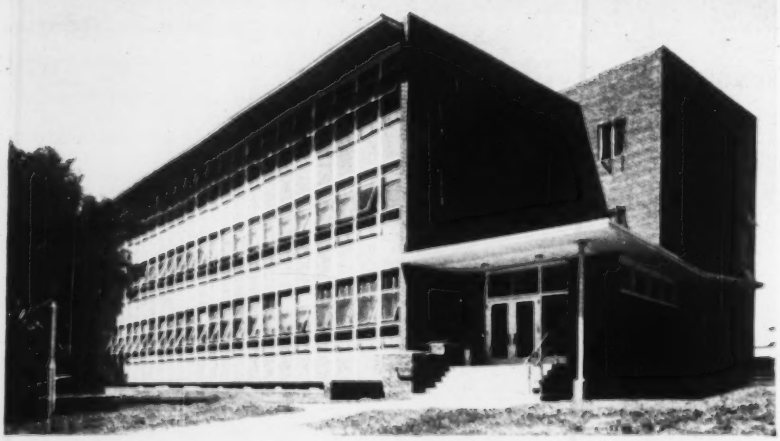
Chardon High School, Chardon, Ohio
A. E. Sidells, Architect
Hambden Construction Co., Contractor.



PAROCHIAL SCHOOL

St. Jude's, Wheaton, Md.
Johnson and Boutin, Architects.
Victor R. Beauchamp Associates, Inc.,
Contractor.





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Perkins and Will, Architects.
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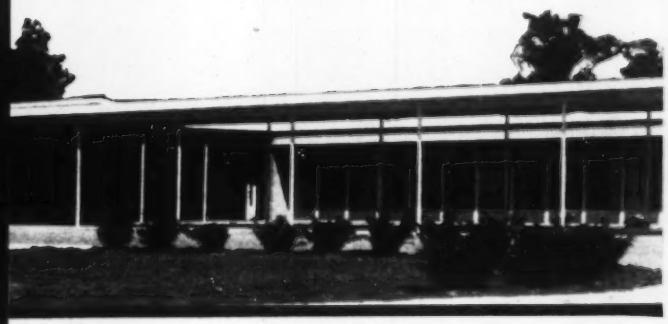

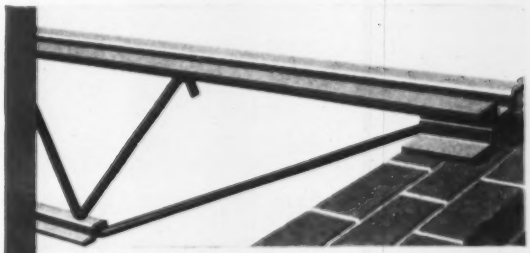

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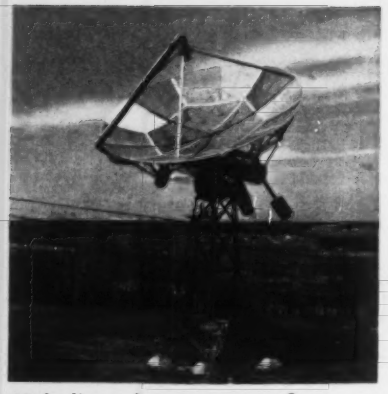


28-ft-dia telescope was first.

60-footer went further out in space.

90-ft twins track stars together.

Radio Telescopes: New Challenge to

Radio telescopes—big, movable structures built to minute tolerances—are a new challenge to builders.

• The challenge began in the early 1950s when a collection of scientists and government representatives concluded that the U. S. could no longer afford to fall behind in astronomical research.

• It is reaching new heights this year with the construction of a $79-million, 20,000-ton facility of electronic equipment and steel work at Sugar Grove, W. Va. (ENR May 28, p. 24).

• It is opening new and strange vistas for construction's designers and builders.

When completed, the newest radio telescope will enable scientists to probe 38 billion light years out in space—19 times the distance reached by the 200-in. optical telescope at Mt. Palomar, Calif.

Because radio telescopes are so complex, only a few companies have ventured into this unusual area of design and construction where precedents are only now beginning to be established.

By Marianne Stern, *Assistant Editor, who steeped herself in background about the galaxies, before interviewing designers and builders of the major radio telescopes.*

Each new structure is still an adventure into the unknown.

Nevertheless, builders are eying radio telescopes with growing interest. There are now approximately 20 such structures in the U. S. and more are sure to come.

What does the construction involve?

- **Giant weights.**
- **Next-to-impossible tolerances.**
- **Isolated construction sites.**
- **Delicate balance.**
- **Tricky erection.**

The primary problem facing a radio telescope builder is to create a structure of great size and weight with watch-like accuracy.

Its principal part, the antenna, is a web-like rotating dish that gathers and focuses radio waves on a receiver held fixed at the focal point. To perform efficiently, the surface of the antenna must be shaped with extraordinary accuracy. On a typical 85-ft-dia dish, for example, the parabaloidal surface of approximately 6,000 sq ft must be held to a tolerance of $\frac{1}{8}$ in.

The second biggest telescope in the U. S., now under construction at Green Bank, W. Va., has a 140-ft-dia dish with an area of about $\frac{3}{4}$ of an acre. The dish is made of aluminum tubing covered by $\frac{1}{4}$-in. aluminum plates, each 25 ft long and 12 ft wide. Yet, this entire area must not vary more than $\frac{1}{4}$ in. from a perfect parabaloid.

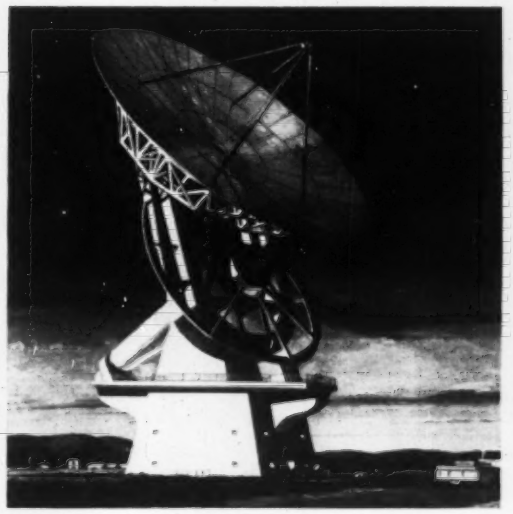
The reflector and supporting structure of the Green Bank telescope contain 300 tons of aluminum, 40 tons of fixed concrete ballast and 5 tons of adjustable balancing blocks. As much as half-a-ton of electronic or other equipment can be suspended on four aluminum tubes, 60 ft above the center of the dish.

With all this, the focus point of the tubes will not deflect more than $\frac{1}{32}$ in., from any of the telescope's positions.

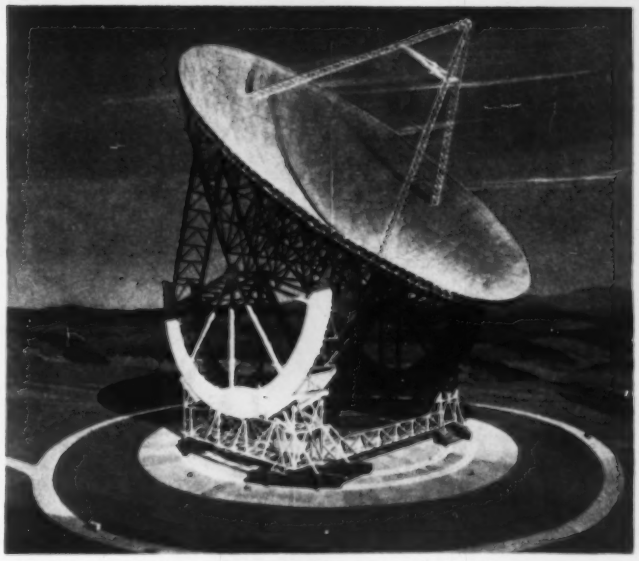
The yoke or U-shaped structure that supports the dish assembly is the heaviest single unit. At Green Bank it consists of 500 tons of steel, 650 tons of ballast and 52 tons of steel balancing blocks. It is shipped in sections, welded at the site, and then, like the dish, is lifted up and accurately positioned on the telescope. (On a smaller telescope a torque tube may be used instead.)

The polar axis shaft, which keeps the telescope aimed directly at the desired point in space, must be perfectly parallel to the earth's north-south axis. It is 12 ft in dia and 67 ft long.

The declination shaft tilts the reflector. It is 57 ft long and 2 ft in diameter, and is built in the form of a hollow



140-footer has five-million light-year range.



600-ft giant will be world's biggest radio telescope.

Builders

steel cylinder encased in an aluminum tube. Perfect alignment can be made with adjusting wedges and jacks when the erected telescope is locked after final adjustment.

The two large gear sectors that drive the two shafts have 3½ in. between teeth centers. They must be accurate to within thousandths of an inch from one tooth to the next. The gears are 85 ft and 71 ft in diameter, respectively.

A 22-ft-dia hemisphere-shaped bearing, on which the entire assembly rests, must be machined in the field so that it is within .005 in. of an absolutely perfect sphere. It floats on a film of oil .005 in. thick.

The supporting reinforced concrete base also must be constructed so that distortions of contour changes are at a minimum when the dish changes from vertical to horizontal position. The base rises 60 ft above ground level and houses receiving and data processing equipment.

A radio telescope must be located in a place where man-made radio signals are at a minimum so that they do not interfere with reception of celestial signals. (In some cases, signals from remote stars are so weak when they reach earth that they may be compared to a one watt bulb spread over the surface of the entire earth.)

Consequently, sites for radio telescopes are generally remote from industrial areas. Bringing in supplies sometimes means constructing roads, fording rivers and removing obstacles. Aluminum is therefore a popular construction material for these jobs; light, small pieces can be brought in by aircraft.

Weather is also an important consideration in choosing the site. Severe snows and winds must be avoided.

Although the structures are big and heavy, they are also delicate. Wind becomes a particular problem on those projects where the dish is first assembled on the ground, then hoisted into position by cranes. During the hoisting operation on one such project, a strong wind gust lashed the heavy dish back and forth between its supporting cranes, endangering thousands of dollars worth of equipment. In this case, damage was minor.

Wind sometimes contributes to the already formidable engineering prob-

What a Radio Telescope Does

Radio telescopes hear what optical telescopes cannot see. They pick up waves from regions of the universe where man has never sent a satellite or even looked. From these radio waves, astronomers can study the structure of our galaxy and the speed at which distant galaxies are hurtling away from us. Radio telescopes trace luminous clouds, colliding galaxies, stars and other celestial phenomena.

This structure is the working arm of radio astronomy—a postwar science that uses radio techniques to receive waves reaching earth from interstellar space.

How do radio telescopes differ from optical telescopes?

From the heavens, celestial objects shower earth with electromagnetic waves of varying lengths, including light and radio waves. Optical telescopes can pick up waves from visible objects as far as two billion light years away. Radio telescopes can receive signals from sources both visible and invisible—as far as five to six billion light years away.

In their journey through space, radio waves pierce interstellar dust clouds and absorbing materials in the earth's atmosphere. Such areas are impenetrable to light waves. Consequently, the telescope's perception of radio waves has opened an area of the universe long silent to man.

When an object is both a light and radio source, radio telescopes provide a check point for optical telescopes

lems. The twin 90-ft radio telescopes recently completed in Owens Valley, Calif., are located on a 300-acre site that is sometimes subject to high winds. The big dishes each weigh more than 40 tons and carry more than 6,000 sq ft of steel mesh. Reflectors of this size could act as huge sails in a high wind. To avoid this danger the sheeting was perforated with ¾-in. diamond-shaped openings to lower wind resistance, to reduce over-all weight and to allow rain to pass through. The holes could not be larger without decreasing efficiency.

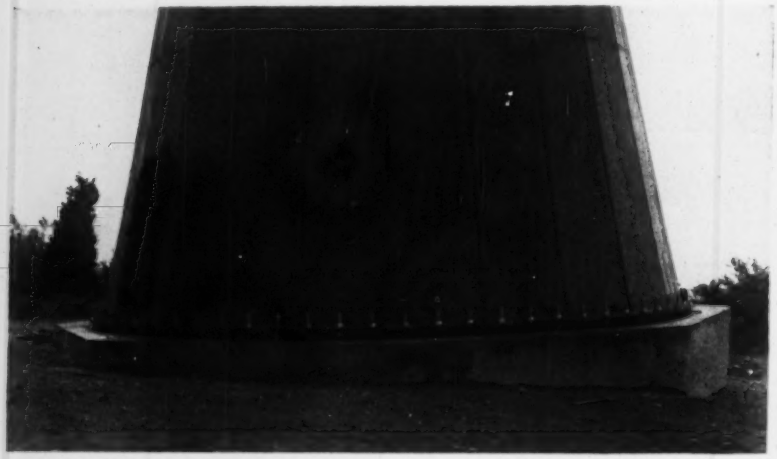
The heavy telescope mountings for the twin dishes also had to be anchored against the wind—but with no loss of mobility. (Mountings and dishes work together to track a star.) The structures were set on wheels and moved on tracks. The two rails were placed 35 ft apart in reinforced concrete foundations to increase stability.

The movable mountings are anchored to five sets of reinforced caissons set at intervals of 400 ft along the tracks and extending 17 ft into the ground. These particular telescopes are built to take winds of 80 mph. However, they will not be used for precise observations if the wind exceeds 25 mph. Such gusts tend to distort the surface skin of the reflector interfering with reception.

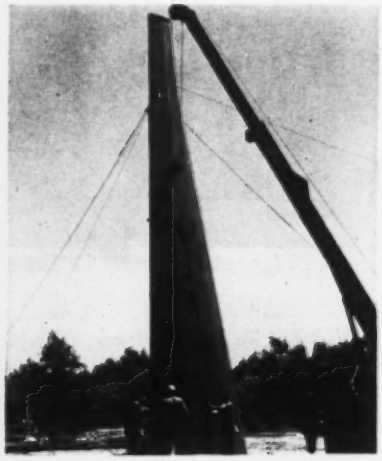
A radio telescope's size presents some unusual field assembly and erection problems.

Raising the big dish is tricky on those jobs where the dish is assembled and marked on the ground. Sometimes the dish is raised in sections and the final tips bolted on in the air. Other times it is raised as a unit.

How They Put a Radio Telescope

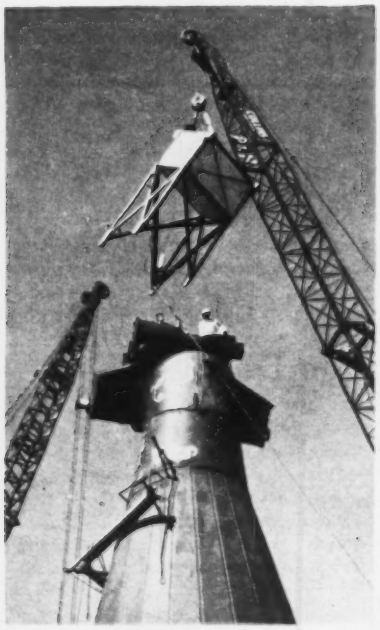


1. Base of heavy reinforced concrete is slanted so that reflector on tower above will be properly positioned toward the sky.



2. Steel pan sections, which form the main tower, are bolted to the base.

5. Polar housing is placed with its axis parallel to Earth's axis.



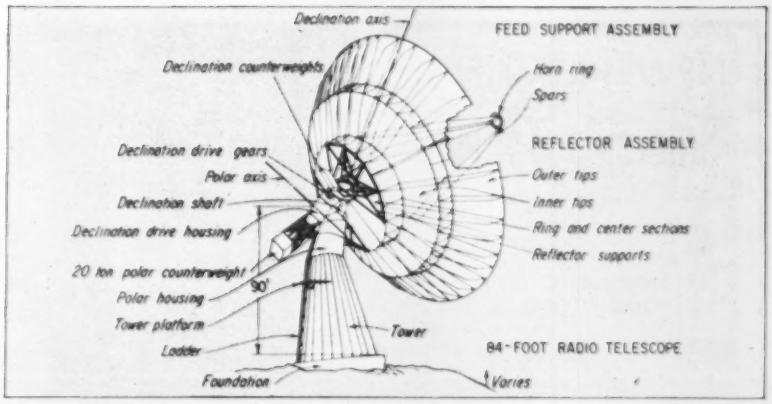
6. Polar counterweights, which keep dish from overturning, are next.

7. Bridges are attached to torque tube, connected to polar housing.

In the case of the 90-ft twin telescopes, each was assembled on the ground and raised 73 ft for mounting on its supporting pedestal. Every detail of the planning for raising the 40-ton dish had to be worked out months in advance. The lift required the design of special holding equipment for the dish and the use of two special 45-ton mobile cranes working in unison.

Another field problem with the 90-ft telescopes was the installation of four 32-in.-dia roller bearings weighing 800 lb each. These bearings support the

Together



3. **Inside the tower, ladder gives access to the upper parts.**

4. **Mounting and drive mechanisms are lifted into place after tower is completed. Here workmen prepare the polar housing for the lift.**

8. **Reflector's ring section is hoisted and bolted to the bridges.**

9. **On the ground the reflector gets trial assembly. Then sections are marked, disassembled and reassembled on the ring section.**

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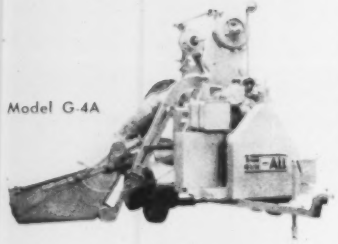

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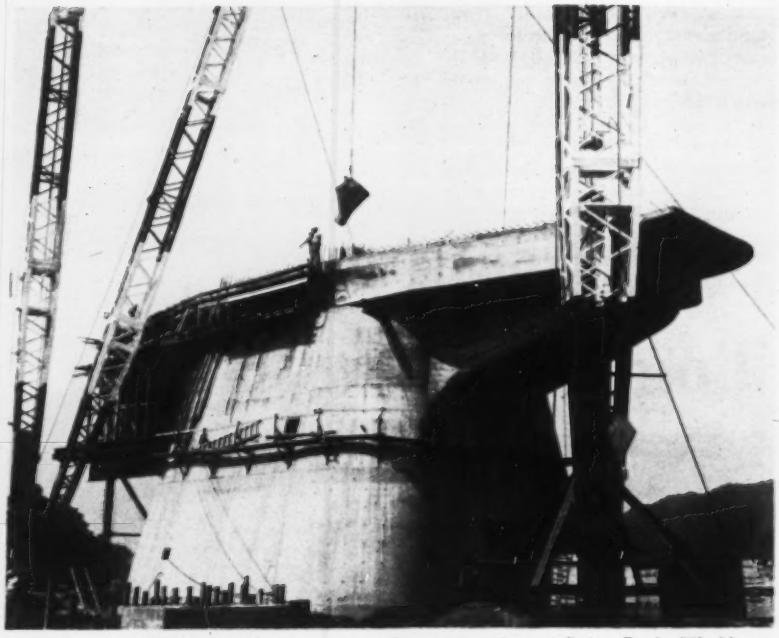


BASE for the 140-ft radio telescope now under construction at Green Bank, W. Va., is a reinforced concrete structure 60 ft high.

entire weight of the dish and its 32-ft-long supporting tube. To insure that the dish is well supported and accurately rotated, each one must fit perfectly and be heavily preloaded. All installation had to be done by millwrights working 50 ft in the air on floats or platforms.

To place these large bearings a special fixture was designed with a 200,000-lb hydraulic ram to give the punch needed to drive them home. The contractor first shrank the bearing shaft with dry ice.

The contractor's last bit of work on radio telescopes comes at night—on a clear, cloudless, moonless night. It is only on such a night that the antenna can be lined up with the polar star by photography permitting the final adjustments that finish the job.

The most common radio telescopes in the U. S. are those with dishes 28 ft, 60 ft or 84 ft in diameter. In addition to the two large telescopes now under construction, several smaller ones are being built or have recently been completed. Each one serves a slightly different function, picking up different types of radio waves.

Radio telescopes are also under construction in Australia, Holland, England and Canada. The British have a 250-ft telescope. The Russians are believed to have a 350-ft one.

Financing for our radio telescopes sometimes comes from universities, but more frequently from the government. The facility at Sugar Grove will be the most costly—$79 million. The Green Bank telescope will run to $5 million, plus the cost of additional facilities at the site. The twin telescopes cost $1.5 million to build.

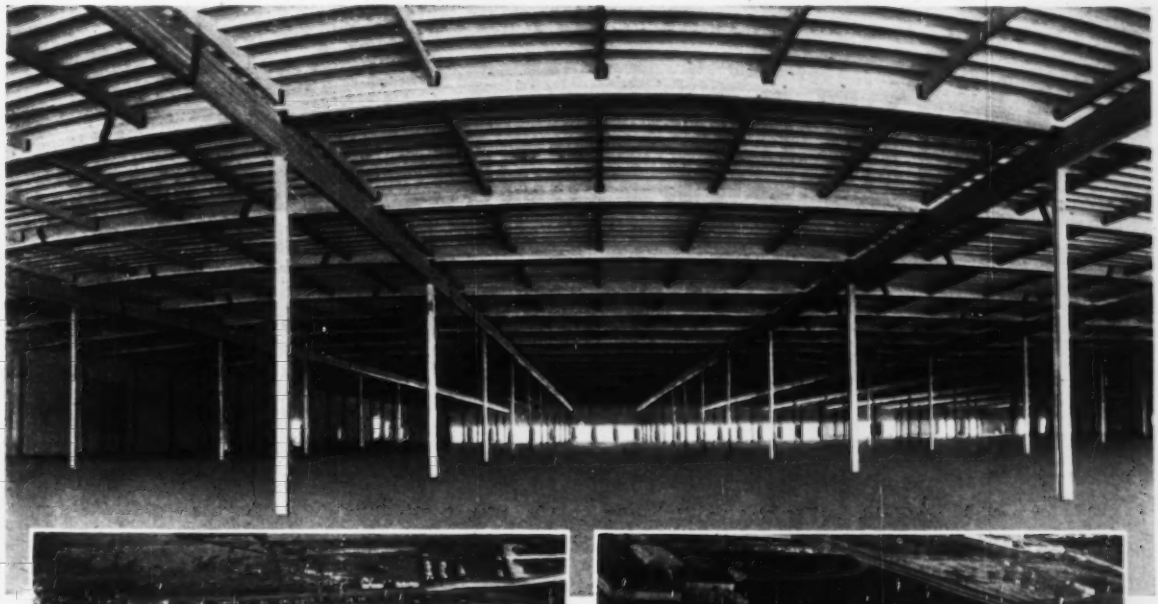
The cost of a radio telescope increases geometrically with the increase in dish size.

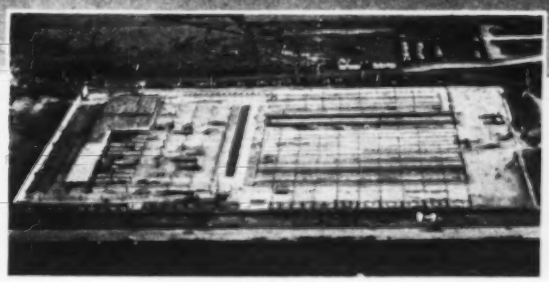
Sometimes the facilities are handled from beginning to end by one company. D. S. Kennedy and Co., Cohasset, Mass., carry a radio telescope project from start to finish—design, shop fabrication, and erection. They have built about a dozen of the big instruments so far in 20-, 60- and 84-ft diameter.

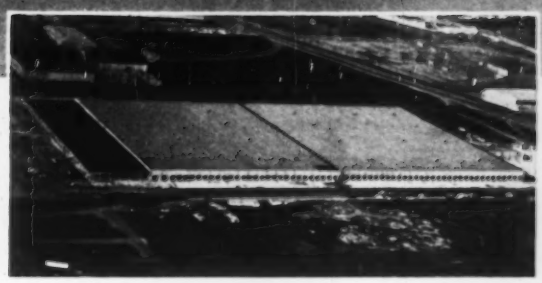
On other radio telescope projects, contracts are split up. The 90-ft telescopes were designed by Bruce Rule of California Institute of Technology. C. W. Jones Engineering, Los Angeles, did the detail work. Allison Steel Manufacturing Co., Phoenix, Ariz., was prime contractor.

The Green Bank telescope is being built for Associated Universities Inc., a non-profit organization of nine eastern universities. E. W. Bliss Co., Canton, Ohio, is erecting and fabricating the structure. The structural concept is the work of Ned L. Ashton, Iowa City.

The 600-ft telescope at Sugar Grove was designed by Grad, Urbahn & Seely, New York City. Ammann & Whitney, New York City, is the consulting engineer. The prime contractor is a three-firm team (Tidewater Construction Corp., Norfolk; Peter Kiewit Sons, Omaha; and Patterson-Emerson-Comstock Inc., Pittsburgh). The structure is a Navy project.







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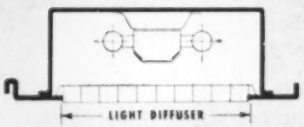
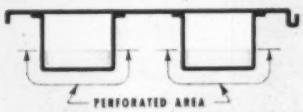


SECTION M1T (Troffer)
DEPTH 6" or 7½"



SECTION M2 (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

At Left: Cross Section of Long Span M-Deck" Combined Roof-Ceiling with Troffer Lighting.

☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- M-Floors (Electrified Cellular Steel Sub-Floors)
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☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

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THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York, Chicago and Los Angeles
Representatives in all Principal Cities

MAHON

Big blast fires 12,500 caps and 123,000 lb of dynamite loaded into 4,750 holes.

Bedrock Shot, Overburden and All

A Swedish contractor is using a new method of drilling and blasting rock without removing the overlying soil. He has applied the technique on a canal excavation project to set up one of the most extensive blasts ever touched off—more than 12,000 caps.

The drill sinks a pipe and drill steel simultaneously through the soil, jetting at the same time. When the pipe has penetrated about 6 in. into the bedrock, it is uncoupled from the drilling action and the hole is sunk farther into the rock with the drill steel alone. The steel is then withdrawn, leaving the pipe as a lining in the earth section of the hole. The pipe is later replaced with plastic piping.

In the big blast 123,000 lb of dynamite was set off in 4,750 holes. The explosion blasted 36,000 cu yd of rock and 90,000 cu yd of overlying clay and moraine.

The canal will be four miles long. It will cut off a sharp bend in the Motala River between Braviken Fiord and the port of Norrkoping, about 90 miles southwest of Stockholm. The section now being excavated is about two miles long. The finished canal will be 31 ft deep and 180 ft wide at the bottom.

Before the big blast, some 120,000 cu yd of rock had been broken in smaller blasts using 20,000 to 45,000 lb of dynamite per blast. The 4,750-hole blast was to break the remainder of a 157,000-cu yd section of rock at the entrance to the canal. Remaining blasts will all be smaller.

The soil cover consists mainly of glacial drift lying on the bedrock covered by a top layer of clay. Varying quantities of rock have to be blasted at about a dozen points along the length of the canal.

Because of the instability of the waterlogged clay the contractor decided to drill and blast without removing the earth cover, and then to perform the whole excavation as a dredging operation.

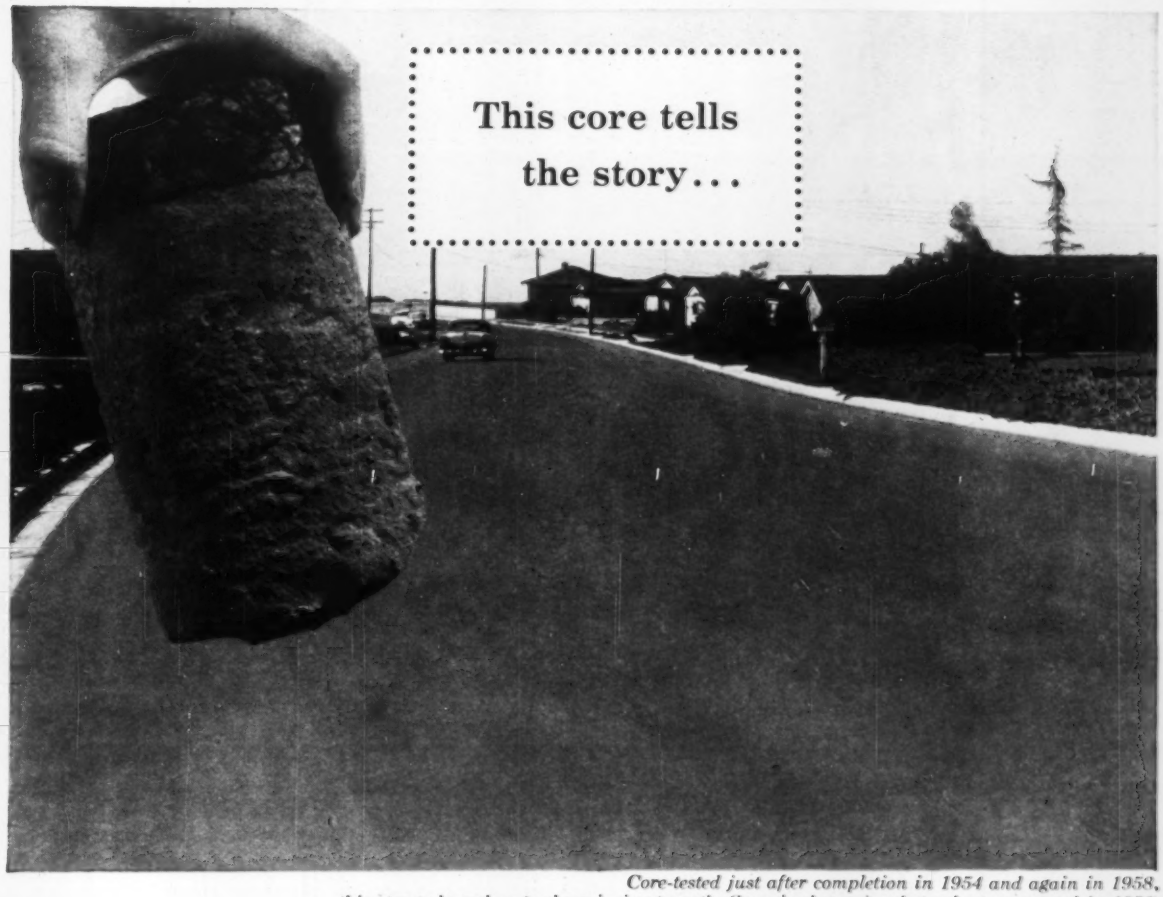
• Drills made for job—Special drill rigs were built with 52-ft feed. A device giving considerably greater torque was substituted for the regular rotation mechanism. The device rotates both a drill pipe and a 1¼-in. drill steel running through the pipe. Hammer blows are transmitted to both the pipe and the drill steel.

The drilling rate has been 15 holes per shift in sections where the average hole is 40 ft deep (3 ft of clay, 7 ft of moraine and 10 ft of rock). The annular cutting head of the drill pipe is fitted with carbide teeth and the drill is tipped with a 2-in. detachable 4-point bit.

• Powder placed by air—Plastic piping, through which the hole is charged, is pushed down inside the drill pipe. The piping is fastened in the rock by an external packing ring. The steel pipe is then pulled up.

Compressed-air apparatus is used for actual loading of the holes. Cartridges are inserted through the breech opening of the plastic tube. The opening automatically closes when compressed air is applied through a foot-operated valve, and the air forces the cartridges down the tube into the drill hole. The loading tube has an internal diameter slightly larger than the 25-mm dia of the dynamite cartridges. At the ejection end there is a narrower mouthpiece

By Sten H. Brannfors, *an explosives expert with 18 years of blasting experience. He is chief engineer of Skanska Cementgjuteriet, the Stockholm general contracting firm doing the job he writes about.*



Core-tested just after completion in 1954 and again in 1958, this street showed a steady gain in strength. Sample shown in photo above was cored in 1958.

On San Diego's La Jolla Ranch Road strength is now 540 psi after just 4 years

...soil-cement pavement grows stronger year by year!

Soil-cement gives more load-bearing strength per dollar than any other low-cost pavement!

Soil-cement is one pavement that really stretches street budgets.

In most cases, 75% of the materials are free! Soil at the site is the main ingredient. Even gravel, or the broken-up old asphalt can be used. This is mixed with portland cement and water, rolled solid and given a bituminous topping. Local traffic can go through on soil-cement pavement right away.

Skilled crews using modern machines can build several blocks a day. And maintenance is kept to a minimum because soil-cement doesn't pothole or soften. It outlasts any other low-cost pavement.

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soil-cement

SPECIAL RIG sinks both pipe and drill steel.

PNEUMATIC LOADERS force cartridges into hole.

to build up pressure and to slit the cartridge wrapping.

Some 40 or 50 cartridges may be loaded at a time. Effective tamping action to attain the required density of charge is obtained by an up-and-down movement of the loading tube in the bore hole.

The priming charges consist of 22-mm cartridges of blasting gelatin with two short-delay electric detonators. They are placed near the bottom of the holes after a few ordinary cartridges have been loaded and well tamped. To place a primer, the loading tube is withdrawn from the hole and a primer inserted in the mouthpiece. The tube is then pushed down into the hole with the detonator leg wires on the outside. Leg wires are provided with extra-strong insulation, and the blasting caps themselves are mechanically strengthened by means of a specially constructed outer shell.

Where the rock is especially deep, primers are also placed in the middle of the bore hole as well as near the collar.

• **Close spacing of holes**—The large quantity of dynamite (3.4 lb per cu yd in the big blast) is necessary to get sufficient fragmentation to permit dredging.

The concentration of explosive is achieved by spacing the holes considerably closer than usual—about 5 ft instead of 7½ ft.

That posed the problem of preventing a disturbance of the firing sequence by sympathetic detonation. It was solved in the 4,750-hole blast by first loading every other hole with 60% dynamite and then going over the blast area again, loading the in-between holes with 50% dynamite. Moisture in the wet holes reduced the sensitivity of the 60% dynamite somewhat but did not impair explosive force. Since the 50% dynamite was in the hole for a shorter length of time its water-resisting properties were quite adequate.

• **Big wiring job**—Loading and hooking up the blast took about six weeks. The number of delay intervals employed for the big blast was 31. Delays varied from 12 or 13 milliseconds between the first twenty detonations to 25 to 100 milliseconds for the remainder.

The holes were connected in 263 parallel series of about 45 holes each. Four twin-wire bus wires of bare copper supported on posts ran the length of the blast area. These were parallel connected by cross leads. The complete electrical circuit comprised about 300 miles of wire.

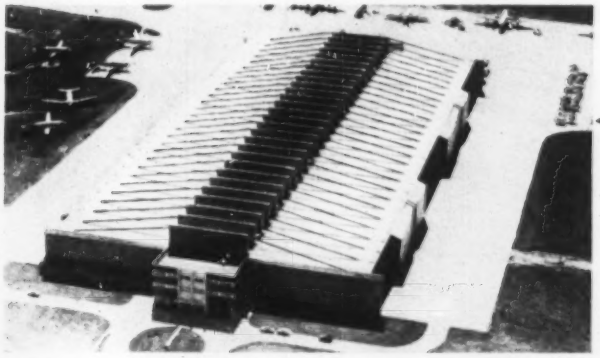
A specially constructed blasting machine of the condenser-discharge type was used. Power was supplied from a hand-driven generator. At 1,000 volts the capacity of the machine is about 1,000 amperes and the maximum output is about 1,000 kilowatts.

• **No dredging difficulty**—Dredging trials carried out at Norrkoping have shown fragmentation to be completely satisfactory. The job is being done by a new dredge with 0.8 cu yd buckets. The machine has a capacity of about 600 cu yd per hr when operating in loose material.

Other blasting will take place successively along the canal as the dredge makes its way forward. In addition to the dredging in the canal, a channel extending about two miles out into the fiord will have to be deepened. In all, about 5.2 million cu yd, including 260,000 cu yd of rock, will be dumped farther out in the fiord.

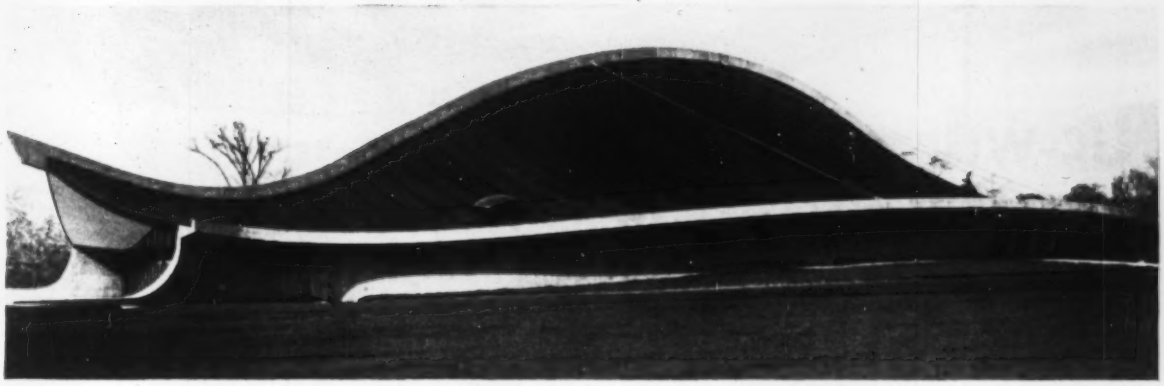
With the equipment employed on the canal project, holes up to 65 ft deep can be drilled through difficult moraine containing large boulders. With more powerful equipment the hole depth could be increased. The new drilling method has been used to drill anchorages for piles in sloping rock, and for underpinning and other reinforcement work. The proprietary method was developed by Skanska Cementgjuteriet, of Stockholm.

UTICA MEMORIAL AUDITORIUM, N. Y. *Architects:* Gehron & Seltzer, New York City • *Associate Architect:* Frank C. Delle Cese, Utica • *Consulting Engineer:* Dr. Lev Zetlin, New York City • *Contractor:* Sovereign Construction Company, Ltd., Fort Lee, N. J. • *Roof Supporting Structure, Including Cables, Furnished and Erected by Roebling*



TWA HANGAR – MID-CONTINENT INTERNATIONAL AIRPORT, KANSAS CITY • *Designed by* Burns & McDonnell, Kansas City • Ammann & Whitney, *Consulting Engineers*, New York City *Contractors:* MacDonald-Creighton, St. Louis and Nashville • *Cables by Roebling*

YALE UNIVERSITY'S – DAVID S. INGALLS ICE HOCKEY RINK, NEW HAVEN • *Architect:* Eero Saarinen and Associates, Bloomfield Hills, Michigan *Consulting Engineers:* Severud-Elstad-Krueger, New York City • *Contractor:* George B. H. Macomber, Boston and New Haven • *Cables by Roebling*



Hockey, Planes, Buses and Inventories... the suspended roof covers them all with unobstructed beauty

The suspended roof beautifully weds aesthetics and practicality. This daring and down-to-earth design and construction technique has literally "spread its wings" over a number of different structures to the dollars and cents benefit of its builders as well as to the delight of its observers.

Terminals, sports arenas and warehouses are currently enjoying the *unimpeded* scope of movement and view afforded by the roof that needs no columns. Material, man and events *move* under the suspended roof with an ease heretofore unknown. Trucks can turn, planes can be serviced and "every seat in the house" is a vantage point under the suspended roof.

Shown here are a few of the examples of what architects and builders are doing with the suspended roof. We at Roebling seriously invite your inquiries on *any* phase of the suspended roof or other types of suspension systems. Our history includes suspension bridges of every description, tramways, guyed towers and ski lifts. Any means of communication to John A. Roebling's Sons, Bridge Division, Trenton 2, New Jersey, will bring you a wealth of material.

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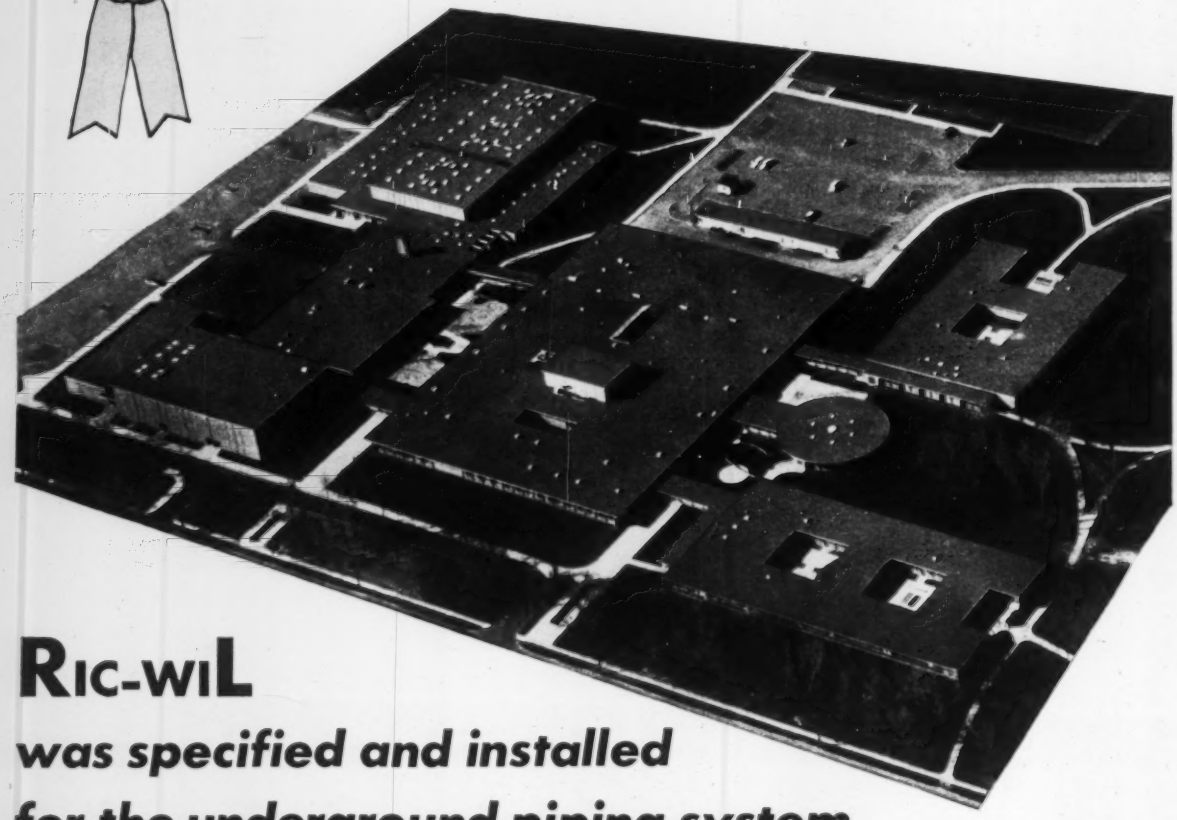
at Award Winning Linton High School...*



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was specified and installed for the underground piping system

Architects: Perkins and Will, Ryder & Link
Consulting Engineer: E. R. Gritschke
Contractor: Tougher Plumbing & Heating Co.

RIC-WIL is indeed proud to be a part of the Linton High School Project. All of the firms participating in the annual awards are to be congratulated and encouraged in promoting better design of educational buildings. For over 49 years RIC-WIL has supplied the distribution piping systems for educational buildings through the United States, Canada and many foreign countries. These piping systems have proved to be the finest in Thermal efficiency and mechanical strength. Complete information is available on the many types of systems. Write, wire or phone for literature.

* School Executive and Educational Business Magazines annual award for Architectural and Engineering excellence. Linton High School, Schenectady, New York.

See our catalog in Sweets

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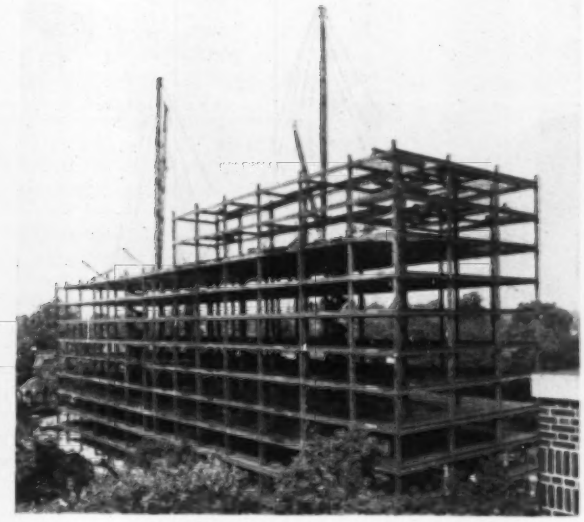
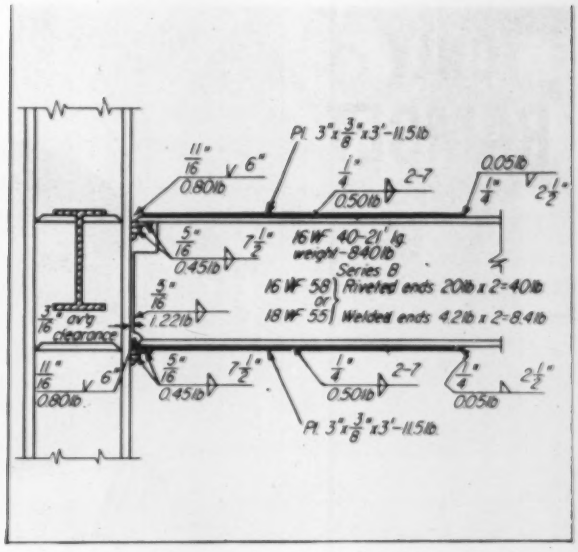


Rigid requirements for this structure . . .



Were met with Type A-B welded connections

Welding Solves a Structural Problem

Designing the 15-story Plaza Apartments in Wilmington, Del., provided a practical opportunity to demonstrate that a Type A-B connection, when used advantageously, can reduce construction costs and produce better design.

The owner had imposed several restrictions on the building's structural design that eventually led us to develop a welded structure.

The restrictions:

- Floor heights must be the same.
- Every floor thickness, including ceiling finish, must be the same. No beams can project below the ceiling level, regardless of depth required for wind-bracing beams. All high-pressure cooling and heating ducts and other mechanical services are to be placed in the unexposed spaces.
- All columns must be the same square dimension so all apartments will have the same finished column exposure.
- A quiet form of construction must be used, one that will not need piles for footings. (This requirement was dictated by residential zoning and low soil bearing values at the site.)
- A type of spandrel beam that would prevent leakage over window heads must be selected, because of a recessed type venetian blind arrangement.

Our firm's first tentative design was for a reinforced concrete structure. But it soon proved unsuitable for the design conditions imposed. Reinforced concrete construction was too heavy for foundation conditions, and required steel core columns in lower floors to meet the uniform column size requirement; and it required a hanging ceiling to hide ducts—all of which made the cost of a reinforced concrete building uneconomical.

We needed, instead, some form of lightweight structure. We next prepared a design based on a lightweight open-web steel joist supporting thin concrete floor slabs—the joists in turn to be supported on a structural steel frame.

This design produced lighter total loads on columns so that the columns could be a uniform size—12 WF from footing to roof.

But when it came to meeting the ceiling-to-floor thickness requirement, we still found it economically impossible to design wind-bracing girders that would not project below the ceiling level in the lower floors.

At this point it was decided that a welded structure using the A-B connection design for wind-bracing girders would be the most economical and suitable solution. This design would keep all girders within the ceiling depth required.

To maintain a uniform bearing level for open-web joists resting on the wind-bracing girders on lower floors, reinforcing plates were to be welded to the under side of the top flange, rather than on top of the flange. The bottom reinforcing plates were to be welded to the under side of the bottom flange.

This placing of plates involves no penalties in cost. All plates are placed with the beam in an upside down position without turning over—as is usually done where plates are placed on top and bottom flanges. A small hand-supported submerged welder attaches end plates with a high quality weld.

Welded connections resulted in a sizable beam tonnage saving on all beams running lengthwise of the building, because these beams could be designed continuous.

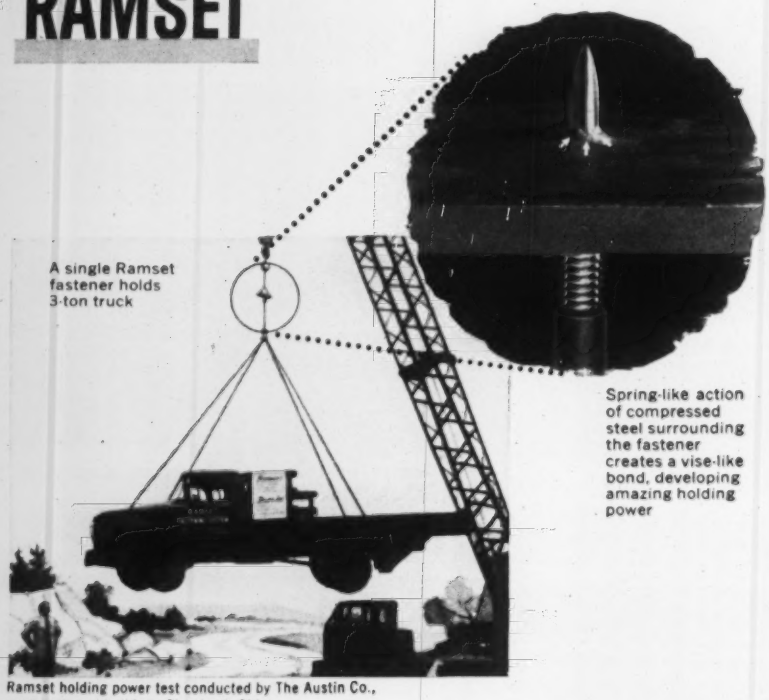
The adoption of a single-size column throughout a building also had advantages in ordering, in detailing, for erection and for field splices, which in this building were butt welded. All were similar except for the quantity of weld material required in lower floors.

The single wide-flange wall column is especially advantageous. By properly locating the center line of the column with reference to the exterior wall, we could make all spandrel beam connections to the inside of the outstanding flange, thus getting a constant spandrel connection condition throughout the height of the building.

Other economies were effected for

By Van Rensselaer P. Saxe, *Baltimore consulting engineer, whose earlier article, "How to Get Better, Less Costly Welded Connections" (ENR Aug. 21, 1958, p. 34), created considerable interest. Main point of that story: Welded design should be an improvement over older methods, not an attempt to copy them. He demonstrated why Type A-B welded connections are more effective than conventional connections. In this article, Mr. Saxe tells how Type A-B connections cut construction costs when applied to a specific building.*

ONLY RAMSET



A single Ramset fastener holds 3-ton truck

Spring-like action of compressed steel surrounding the fastener creates a vise-like bond, developing amazing holding power

Ramset holding power test conducted by The Austin Co., engineers and builders, Cleveland, Ohio

offers austempered fasteners with such superior holding power

Even under the most demanding workloads, Ramset's austempered Red-Tip fasteners assure more holding power and greater fastener strength. Austempering, Ramset's high-heat slow-quench treatment, puts extra strength, toughness and dependability into every Ramset Red-Tip fastener.

Ramset's wide variety of fastener sizes puts the *right* fastener on each job—you don't have to "make-do" with off-size pins or studs. Ramset assures positive, guaranteed fastenings into tough steel, concrete or masonry faster and easier, and at lower in-place cost. Consider Ramset's many advantages and the "100-for-100" guarantee—call your Ramset dealer (under "Tools" in Yellow Pages) for details.

In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set® hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

Ramset® Fastening System

WINCHESTER-WESTERN DIVISION • OLIN MATHIESON CHEMICAL CORPORATION
287-J WINCHESTER AVE. • NEW HAVEN 4, CONNECTICUT

. . . Structural problem

the spandrel beams. The actual load on most of the longitudinal spandrels was not great—although they acted as struts between wall columns and had to be stiff. The design called for a built-up welded section made up of welded plates and angles with an alternate made up of a single ¾-in. plate, shop bent to the shape required for the spandrel beam, and field welded to the column flange.

Figures received from fabricators indicated that the bent-plate spandrel was considerably more economical than any other combination that could be used to get the shape required. The bent plates were straight and true and easy to erect.

Another important feature is that this continuous-type spandrel develops absolute freedom from water leakage over window heads.

A cost problem almost developed from the requirement for the same ceiling height throughout each floor. When trying to use standard joists of the required depth, we found that the variation of joist spans produced too much waste joist material.

Joist manufacturers indicated that for a very small increase in tonnage cost we could design open web joists of the same depth regardless of span, if we called for material that the fabricators kept on hand for standard joists. Doing so produced a net saving and an unusually stiff floor system, with a ceiling uniform in depth under all structural steel.

By using welding as the connection method, the structural steel for this wind-braced building averages 9.0 psf and for the joist floor system, 2.8 psf.

The steel cost was in competitive range of other methods for joining steel. The highest tensile stress used for all butt welds was 20,000 psf.

Architects for the building were Victorine and Samuel Homsey of Wilmington, Del. Ernest Di Sabatino and Sons, Wilmington, was the contractor. Van Rensselaer P. Saxe was engineer.

Plane Sprays Sand on Ice To Hasten River Opening

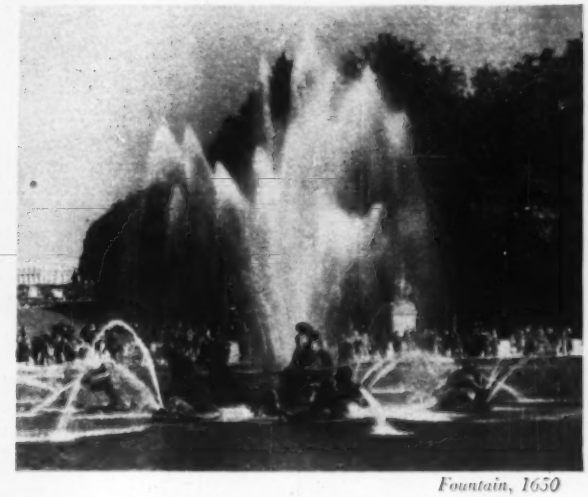
The Russians have been using aircraft equipped with sand sprayers to break up ice jams in Siberian rivers.

The planes sprayed waste sand from metal molding shops to turn the ice black. Blackened ice absorbed the sun's warmth more quickly. As sand grains melted the ice, they formed minute tunnels that filled with water. At night the water froze, expanding in volume and bursting the surrounding ice.

One river was reported open for shipping 10 to 12 days earlier than usual after this method was used.

Aqueduct, 105 B. C.

Cathedral, 1065



Fountain, 1650

Ludlow Hydrant, 1883

SO WELL-MADE

they're still in use!

In a sense, Ludlow and Rensselaer fire hydrants are among the great man-made objects. They're built to *last*. All Ludlow and Rensselaer hydrants are made to stay on the job through years of rough treatment and rigorous climate —never quitting!

Developed through nearly 100 years of practical experience, Ludlow and Rensselaer hydrants have *earned* their title of "watchdogs of American property." Without exception, they give you the 4 basic requirements for hydrant performance: simplicity of design, absolutely tight closure, no freezing and no flooding due to standpipe breakage.

WRITE TODAY for L&R Fire Hydrant Catalogs showing a model for every need.

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"K&M" ASBESTOS-CEMENT SEWER PIPE

INFILTRATION-PROOF AT 25 PSI PRESSURE

Tests prove that the exclusive, patented "K&M" FLUID-TITE Coupling maintains a permanently infiltration-proof seal under severest field conditions.

This is true even when "K&M" Asbestos-Cement FLUID-TITE Sewer Pipe is under deflection, or is buried at various depths under heavy backfill. Tests prove this infiltration-proof pipe can withstand 25 psi external water pressure.

In addition to its tight sealing, "K&M" Asbestos-Cement FLUID-TITE Sewer Pipe is non-corrosive and completely immune to electrolysis. Its bore—with a Manning Factor of n-0.010—remains smooth and clean for full, unobstructed flow.

That's why there's a minimum of maintenance with this hardy pipe. It reduces treatment loads and costs. Requires fewer periodic inspections and cleanings.

There are five classifications of "K&M" Asbestos-Cement FLUID-TITE Sewer Pipe to meet your crushing strength requirements. To simplify planning and design.

Eliminate the problem of infiltration with tested and proven "K&M" Asbestos-Cement FLUID-TITE Sewer Pipe. Write to us today.

5 CRUSHING STRENGTHS OF "K&M" ASBESTOS-CEMENT FLUID-TITE SEWER PIPE

Size Inches	Class 1500	Class 2400	Class 3300	Class 4000	Class 5000
6	1500	2400	3300		
8	1500	2400	3300		
10	1500	2400	3300	4000	5000
12	1500	2400	3300	4000	5000
14	1500	2400	3300	4000	5000
16	1500	2400	3300	4000	5000

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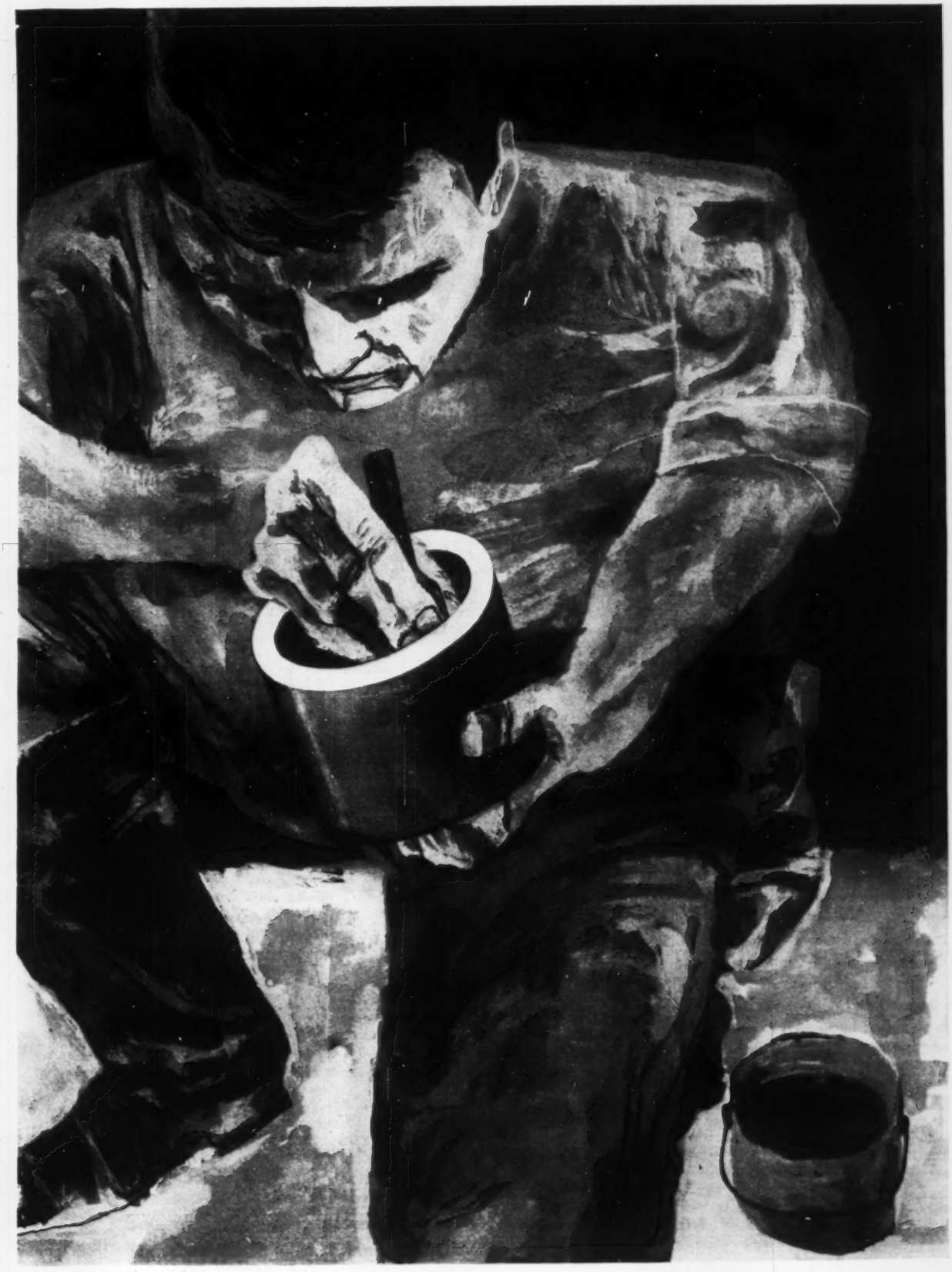

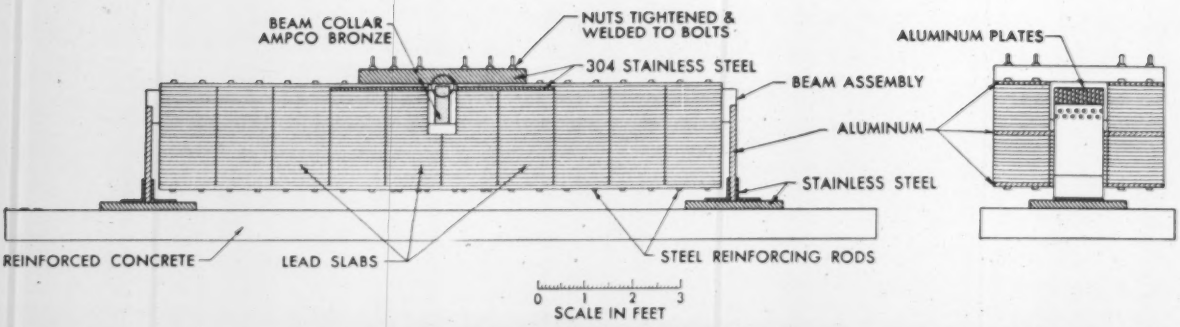

LEAD – 592 slabs totaling 25 tons – is used as a damping mass to confine vibration and noise to the test area and to dissipate energy.

MINNEAPOLIS-HONEYWELL researchers investigate the effects of vibration on the drift rate of gyros and accelerometers. Here, actual vibrations and mechanical noise produced by a missile or space ship are exactly duplicated.

Lead Controls Vibration in "White Noise" Room

The "White Noise" Room of Minneapolis-Honeywell Regulator Co.'s Inertial Guidance Center at St. Petersburg, Fla., is another example of Lead's usefulness in controlling vibration and noise. "White Noise" is so called because it includes several frequencies of the noise spectrum, just as white light is a blend of several frequencies of the light spectrum.

Lead lends many advantages to this installation. It is massive and an excellent internal viscoelastic damper. Lead's high specific gravity permitted design of the mass within height limitations . . . and the low structural center of gravity also minimized effects of spurious vibrations, force couples, etc. Lead is nonferromagnetic and eliminated magnetic field disturbances which would interfere with other work in the area.

If you have a vibration or noise problem, it is very likely that lead in one of its many forms can provide the answer. Write today for further details. 2087

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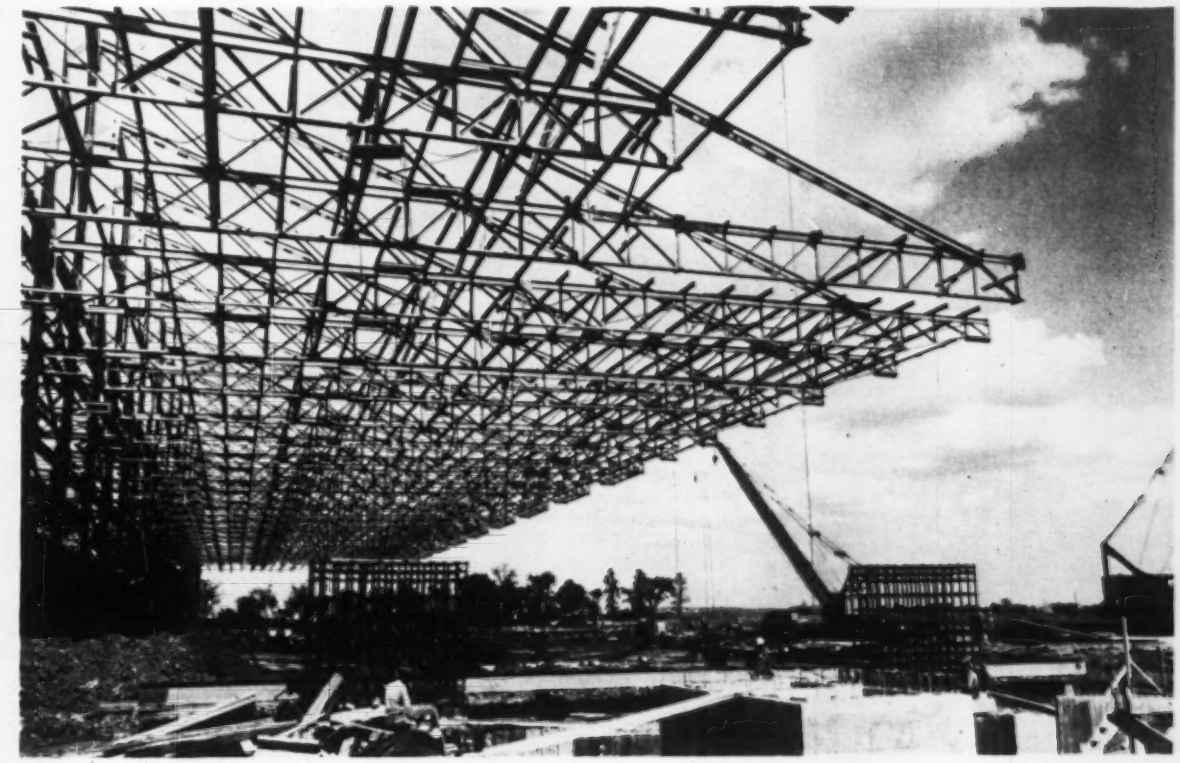


Nearly completed at Montreal Airport is a . . .

Giant Cantilever for Jet Workshop

A giant single cantilever steel structure, 836 x 175 ft dominates Montreal Airport's new jet plane maintenance center, which will serve as headquarters for all Trans-Canada Airlines maintenance bases. The project includes stores, aircraft overhaul and line maintenance, engine overhaul and testing, and a flight operations training and simulator center.

Cost, exclusive of equipment, is expected to be $16 million. Completion is scheduled for next March.

The cantilever structure, for the main hangar, is suspended on diagonal structural steel members from 10-ft high, 16-in. steel columns. The cantilever design permits unobstructed entrance through 50-ft-high sliding doors for the whole length of the building.

There will be one other hangar, 490 x 236 ft and of double cantilever design. It's designed to withstand 50 psf snow load and a wind velocity of 90 mph. It will have four concrete pylons, 150 ft long. From the edges of these four elongated concrete walls, structural steel trusses cantilever out 90 ft on each side. Pass-through doors, 50 ft high, are located at the ends of the cantilevers. The long clear span allows a variety of large aircraft to maneuver within the base.

Five DC-8 Jetliners can be accommodated in the single cantilever section and another three in the double cantilever hangar.

The hangars have aluminum windows, metal siding and brick walls, lightweight concrete and metal roof decks and masonry interior partitions.

More than 100,000 sq ft of materials storage space will be provided in a 300-ft-wide annex adjoining the overhaul hangar. This area will be equipped with a complete pneumatic-tube message system and a floor-conveyor system, as well as monorail and crane systems for materials handling, and maintenance shops.

A reinforced concrete engine test building is designed specifically for the DC-8's jet engines and the Vanguard's turbo-prop engines. The building is provided with silencers and acoustically treated materials.

The office building is separate from main structures, but connected to them by an enclosed corridor. The building has a steel frame, metal and glass curtain wall and a concrete slab roof. It will house base headquarters offices, an electronic data processing center, a medical center and a cafeteria.

Another building of the same construction, sealed and air conditioned, will contain the DC-8 Vanguard and Viscount flight simulators in a two-story hall with adjoining training rooms and attendent areas.

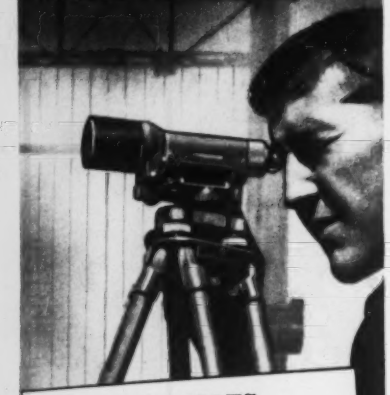
The combustible stores block is of concrete construction and separate from the main area. Parts of the block are protected by carbon dioxide fire extinguishing systems.

The power plant building contains a heating, air conditioning and compressed air plant, fire protection facilities and 12,000-volt primary distribution switchboard.

Architects for the base are Ross, Fish, Duchenes and Barrett. The engineering consultants are Keith Associates Ltd. Pigott Construction Co., Ltd., is contractor for the main project. All are from Montreal.

(International continued p. 66)

WHERE THERE'S A
BIG JOB
THERE IS A
KERN
INSTRUMENT



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precision surveying instruments... compact, rugged construction... fast, effortless operation. More reliable results in less time.

KERN'S NK3
precise level

Was used at Gloucester Anchorage of new Walt Whitman Bridge then under construction over Delaware River. (Modjeski & Masters, Ammann & Whitney, Consultants to the Delaware Bridge Authority of Pa. and N. J.)

DESIGNED FOR HIGHEST PRECISION LEVELING

- Functional, down-to-fundamentals design—only 4½ lbs. (8 lbs. with carrying case).
- Coincidence level and fine tilt screw.
- Readings at a glance—level and rod may be read simultaneously through 30x Telescope.
- Mean leveling accuracy under normal conditions ± .008 ft. per mile.
- Kern AR coated optics produce substantial increase in brilliance and contrast of image.

Write for Brochure NK 527-1

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Primitive construction techniques will go hand in hand with . . .

. . . Modern methods in Pakistan's ambitious dambuilding program.

Big Outlay for Pakistan Dams

Pakistan plans to spend over $800 million on water and power development in West Pakistan during the country's second five-year plan, 1960-65.

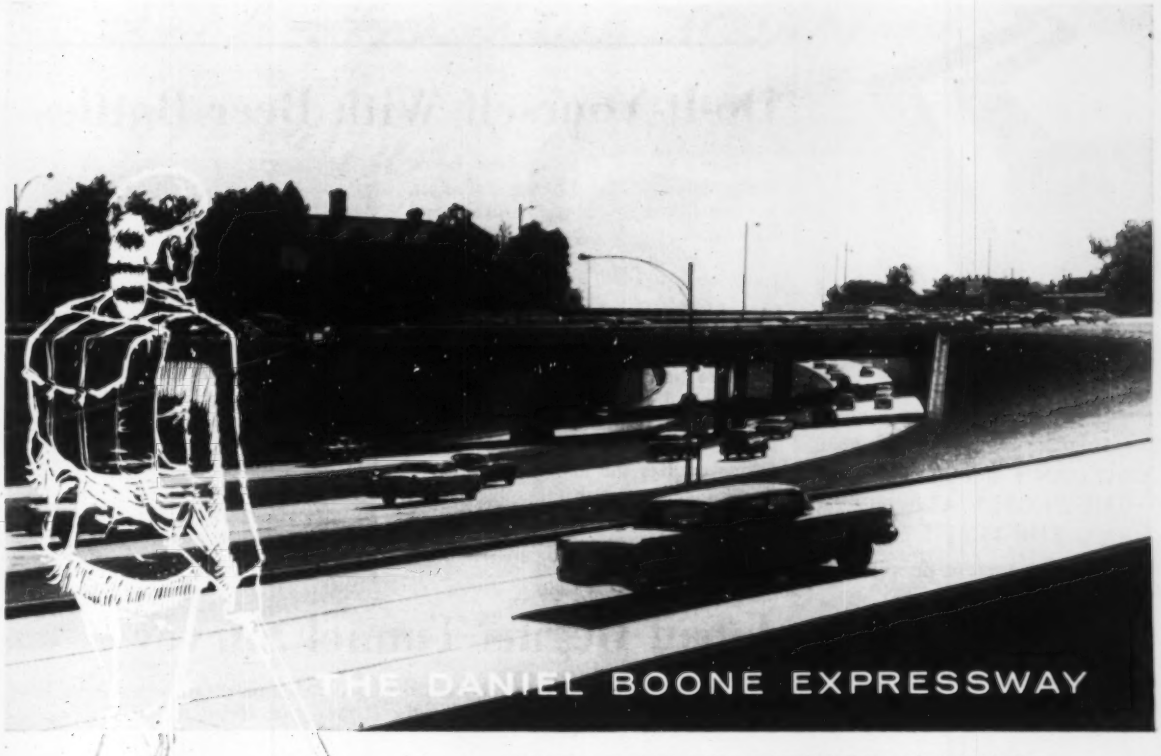
The government's Water & Power Development Authority will spend about $630 million of the outlay on irrigation projects and $180 million on hydroelectric and natural-gas projects during the program.

By 1965, the new work will bring 10 million acres of new land under cultivation and raise hydropower capacity by 175,000 kilowatts.

The Authority's new water schemes include construction of 20 dams on the Indus River. The Indus has been a point of contention between Pakistan and India since their separation in 1958, but a settlement seems likely now (ENR Aug. 20, p. 60).

The biggest single project among the new schemes is Tarbela Dam, a multipurpose development to be built on the Indus. It will take nine years to complete and will ultimately cost $240 million. Storage capacity will be 4.2 million acre-ft. Potential power capacity will be 600,000 kw.

(*International continued p. 62*)



OLD DAN'L NEVER KNEW...

This newly completed concrete highway bearing the name of Daniel Boone speeds traffic through the very countryside old Dan'l once traveled and knew only as a tangled wilderness.

Modern construction genius employing Laclede's complete designed reinforcement service is helping create a multi-million dollar national system of expressways, of which the Daniel Boone is a part. To withstand the constant pounding of cars to and from ever-expanding suburbs, these new freeways must be built *strong*.

Much of the needed strength comes from Laclede designed reinforcing steels—multi-rib reinforcing bars, welded wire fabric, welded dowel spacers, center and recess joints, tie bars and accessories.

The section of the Daniel Boone Expressway shown above was built by Millstone Construction, Inc., St. Louis.

LACLEDE®

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

BEN H. PETTY
Renowned Engineer & Author

Abraham Lincoln said it:
"YOU CAN'T FOOL ALL OF THE PEOPLE ALL OF THE TIME"

The cement concrete people say in national advertisements:

"This new type of pavement (concrete) . . . has a life expectancy of 50 years and more."

If that's so, why did 100 miles of the 160-mile concrete Pennsylvania Turnpike—after only 14 to 16 years—have to be salvaged by undersealing and resurfacing with Asphalt?

Why do figures by the Bureau of Public Roads* show mileage of concrete pavements to be disappearing from the total mileage statistics faster than they are being built?

Because, when deicing chemicals, alternate freezing and thawing, pumping, warping and cracking take their toll on concrete – as they always do – it has to be undersealed, patched and resurfaced with Asphalt. Most concrete highways are eventually Asphalt – why not build them with Asphalt in the first place?

YOU BE THE JUDGE!

**Details on request.*

Ben H. Petty

Presented as a Public Service by
THE ASPHALT INSTITUTE

Do-It-Yourself With Beer Bottles

There's a new type of beer bottle being shown at the Leipzig Fall Fair. It's something for beer drinkers and do-it-yourself constructors.

The bottles are square in section with concave bottoms. This lets the neck of one bottle nest into the bottom of the next.

Put them on their sides and you get glass bricks. The bottles come in a variety of colors. The idea is that beer drinkers can build such things as a garden wall with the bottles.

Brewers feel the new bottle will cut the disposal and garbage problem, give a boost to the do-it-yourself movement and might even, incidently, boost beer consumption.

Japan Begins Tunnel Survey

Engineers of the Japanese National Railways are making a survey of the floor of the Tsugaru Strait as a preliminary to construction of a 12-mile tunnel under the strait between the main island of Honshu and the northernmost island of Hokkaido.

Both routes under exploration for the tunnel pose difficulties for the builders. The sea bottom along the western route is 450 ft deep at the center and nearly 1,000 ft deep at each end. The sea bed along the eastern route is in a volcanic zone and may be subject to seismic disturbances.

A preliminary survey made in 1946 showed that it was technically possible to bore a tunnel between Honshu and Hokkaido. The two islands are linked now by a ferry service that takes five hours per crossing and is subject to frequent cancellations during the typhoon season.

Japan already has one undersea tunnel (ENR Sept. 13, 1956, p. 56). A double-deck highway and pedestrian traffic tunnel between Honshu and Kyushu, the southernmost island, was completed in 1958 after 21 years of construction and $22 million.

Around the World . . .

• **Bringing home the steak**—Consulting engineers and architects are the highest paid professional group in Canada. The average consulting engineer earned $14,581 in 1957, a government analysis shows. That's $603 more than the average income of the second highest group—physicians and surgeons. Average income of all Canadian taxpayers in 1957 was $3,834.

• **Branching branches** – Chicago Bridge & Iron Co. has announced the formation of a company in The Netherlands whose major business will be the erection of large steel-plate structures. The new company—Chicago Bridge (Netherland) N.V.—is a subsidiary of Chicago Bridge, Ltd., London. The London firm, in turn, is a subsidiary of Chicago Bridge & Iron Co., Chicago.

• **Tourist tower**—Promoters in Melbourne, Australia, plan to build a 1,130-ft-high tower as a tourist attraction. Neither site nor plans have been selected pending a design competition.

• **Jets for Hamburg**—More than $17 million will be spent to make two runways at Hamburg's airport long enough to accommodate intercontinental jet traffic. Two other West German airports, Frankfurt and Wahn (between Cologne and Bonn) have been equipped for jet airliners.

• **Saskatchewan hydro**—The Province of Manitoba is making preliminary surveys for a $100-million hydroelectric project at Grand Rapids, where the Saskatchewan River empties into Lake Winnipeg. Ultimate capacity is estimated at 335,000 kilowatts.

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It's Your Seal of Quality

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FOR SOIL SAMPLING EQUIPMENT

Do you need a sampler to determine only the general classification of the sub-surface soils or to secure samples for testing in a soils laboratory?

Sprague & Henwood has just the sampler that you need.

Illustrated above is the S&H Split Barrel Sampler, a general all-purpose sampling device. The Thin Wall "Shelby Tube" Samplers, the Improved Stationary Piston Samplers, and the Greer-McClelland Hydraulic Piston Sampler are but a few of the many samplers in the Sprague & Henwood Line.

Send for Soil Sampling Bulletin 300.

SOIL SAMPLING RIGS

Compact, lightweight units especially suited for soil sampling and pipe driving work. Units are illustrated and described in Bulletin 300.

FOR CONTRACT DRILLING SERVICES

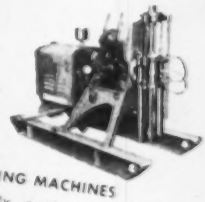
Highways . . . Buildings . . . Dams . . . Bridges . . . Tunnels . . . all require accurate sub-surface investigation. Sprague & Henwood has been making these investigations for more than 75 years throughout the United States and in many foreign countries.

Sprague & Henwood uses modern drilling equipment . . . experienced drilling crews . . . with expert supervision assuring you of the best soil samples and rock cores possible under existing conditions.

Another of Sprague & Henwood's contract services is pressure grouting. Either cement or chemical grout can be injected into the faults and voids depending upon the conditions encountered in the underlying strata.

Branches are strategically located to give you fast efficient service. Send for the new vest-pocket booklet on Sprague & Henwood's contract services.

FOR DRILLING MACHINES & EQUIPMENT



DRILLING MACHINES

Quality engineered and field tested drilling machines are available in various sizes and types to meet varied drilling conditions.

In addition to a wide choice of power units, Sprague & Henwood core drills can be furnished with various sizes and types of swivelheads, and with a choice of four different kinds of mountings: Skid — Trailer — Truck — Tractor. Send us details of your drilling program and we will make recommendations and send you literature immediately.

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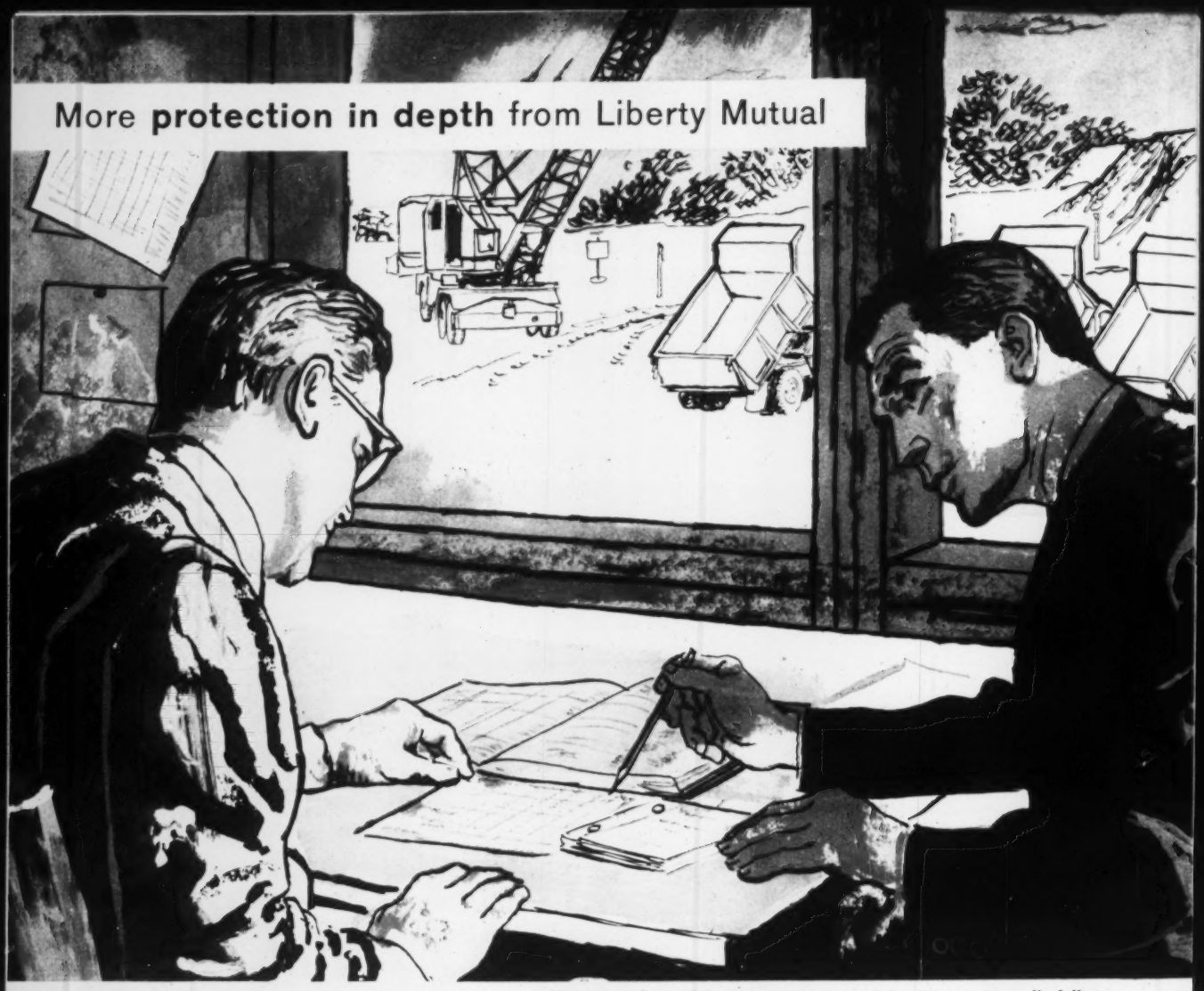

Employee classifications are reviewed by Liberty Mutual's full-time auditors. This procedure can save policyholder premium, make payroll distribution more accurate and easier to handle.

How Liberty's auditing service helps lower your workmen's compensation costs

Contractors can benefit substantially from the accurate pricing of workmen's compensation insurance. This pricing depends on the proper distribution of payroll by type of work performed and assignment to the proper classification. Since there are over one hundred classifications, these assignments must be made skillfully. Often a contractor can gain advantages from the complex rules limiting the amount of payroll considered in premium computations.

Our auditors perform a valuable service, over and above routine auditing, in discovering ways to save you money by proper classification assignments and by applying available limitation rules to your payrolls.

That is why so many Liberty Mutual policyholders regard our auditing service as such an important feature of protection in depth.

Currently 150 auditors travel out of our national pattern of branch offices. There are 10 billing offices to speed up service between policyholder and company. Result: fast, accurate, fair billing.

Of course, auditing is only a part of Liberty's concept of compensation insurance. Protection in depth embraces a wide range of valuable extra services and resources. It includes a research center, a 400-man staff of safety engineers and hygienists, a medical advisory service and many more facilities and specialists to cut accidents and costs.

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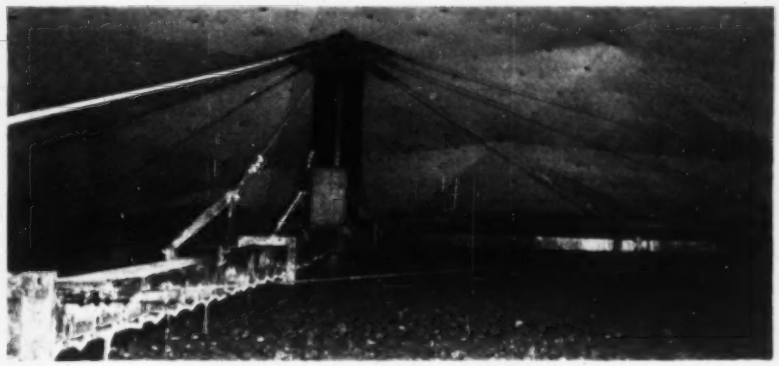
Aluminum Dome Covers . . .



. . . Fabric Filter for Sewage Fumes

A fabric baffle housed under an aluminum geodesic dome has solved an odorous air-pollution problem in Sarasota, Fla., at less than half the cost of conventional alternate methods.

The baffle, installed at the sewage treatment plant, captures offensive and corrosive hydrogen sulphide fumes rising from a trickling filter. It is made of specially treated "Dacron" polyester fiber, closely woven and weighing 3.4 ounces a square yard. The tent-like structure covers the entire 10,000-sq-ft filtering area.

Built over it as armor and support is a geodesic cover of hexagonal aluminum panels and stainless steel frames. The cover shields the fabric from the sun and is itself shielded from the inner corrosive atmosphere by the fabric. The filter is suspended from the metal dome on 500 short lengths of Dacron rope. Ropes of Dacron are used because they are not weakened by bacterial micro-organisms.

Cost of the installation: $42,000.

The supporting structure measures 112 ft in diameter and rises to 27 ft at the peak. The dome's 47 separate panels weigh about seven tons. An auxiliary adjacent structure, smaller and shaped like a pyramid, also uses a fabric liner hung from a metal support.

Seven men put up the entire installation in less than a month. The crew anchored the supporting unit on panels and frames to 15 support brackets mounted on the existing circular concrete wall surrounding the filter bed. Seams on the 300-lb panels were left open to let in air.

Although some rain comes through the open seams, the suspended filter is taut enough so that water, instead of puddling, runs off the fabric, over the wall and onto the ground.

The unit has permitted the treatment plant to discontinue pre-chlorination for odor control. Savings in chemicals are expected to repay the cost of the new structure.

The installation was conceived and installed by Jeffrey Lindsay and Associates, Montreal and Los Angeles. Functional specifications were drawn up by Smith & Gillespie, Jacksonville consulting engineers.

(*Field and Office continued p. 66*)

NOW...
CUT PLYWOOD FORM COSTS
WITH THOMPSON'S WATER SEAL

Note these cost-saving features:

- Prevents absorption of water in concrete forms. Forms last longer.
- Saves labor. Eliminates cost of cleaning, sanding and recoating after each pour.
- Thompson's Water Seal permits eight or more pours per plywood form (min. 4 pours per side).
- Eliminates form damage during stripping. Forms can't stick. Won't soften wood, prevents deflection.
- Easy to apply by brushing, dipping or spraying.

Thompson's Water Seal is deep penetrating, colorless, leaves no residue, won't stain concrete; surface is dust-free, ready for painting.

Available in 5 and 55 gallon drums from suppliers to the construction industry.

See catalog in Sweets Architectural file and Light Construction file.

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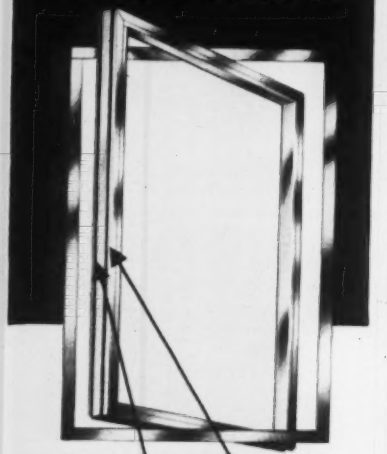
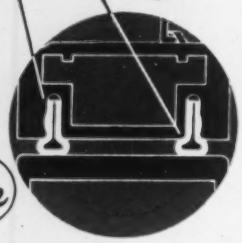
Adlake

reversible windows

WON'T LEAK!





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Adlake

Adlake—and only Adlake—is double sealed with a resilient, rubber impregnated fabric weather strip, permanently positioned in an aluminum binder. This seal has proved *impervious to the elements* in rigorous laboratory tests and in long years of service.

Cold and inclement weather will not affect this weather stripping. In all climates it keeps heated and conditioned air *IN*, water and outside air *OUT*.

That is one reason why there are nearly as many Adlake reversible aluminum windows in service as all other makes combined. Other reasons are: Adlake windows operate at a finger touch. They will never rot, rust, rattle, stick or screech. They will never need paint. Adlake guarantees satisfaction. When you install Adlake you know you are getting the best.

Let us send you the details about Adlake windows. Just write The Adams & Westlake Company, 1184 N. Michigan, Elkhart, Indiana.

THE

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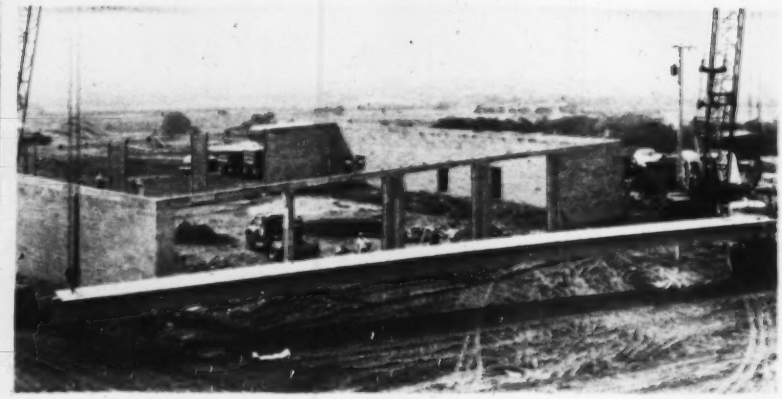
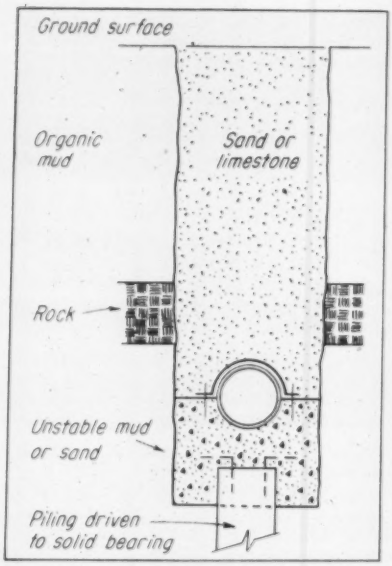
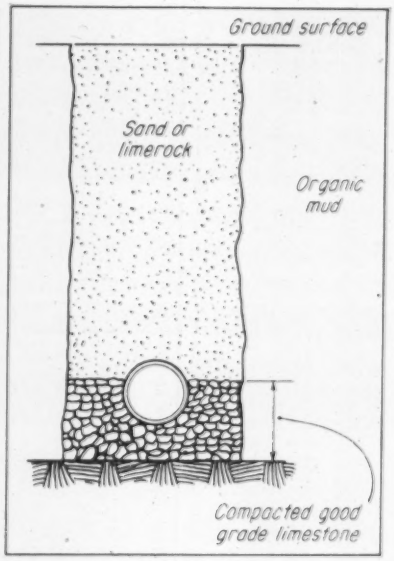


Clear Span for a Clear Shop

Ten of these precast, pretensioned, single-tee members span 100 ft across the Davis County, Utah, equipment building. The panels measure 8 ft by 101 ft 4 in.; center webs are 3 ft deep. They span the length of the 80x100-ft shop because large side door openings would have required high, heavy lintels for a cross-span roof structure. The Prestressed Concrete Division of Utah Sand and Gravel Products Corp. cast the 19½-ton panels two at a time in a permanent shop bed and trucked them 25 miles to the job site.



PILES support sewer pipe if good bearing is more than 10 ft below pipe



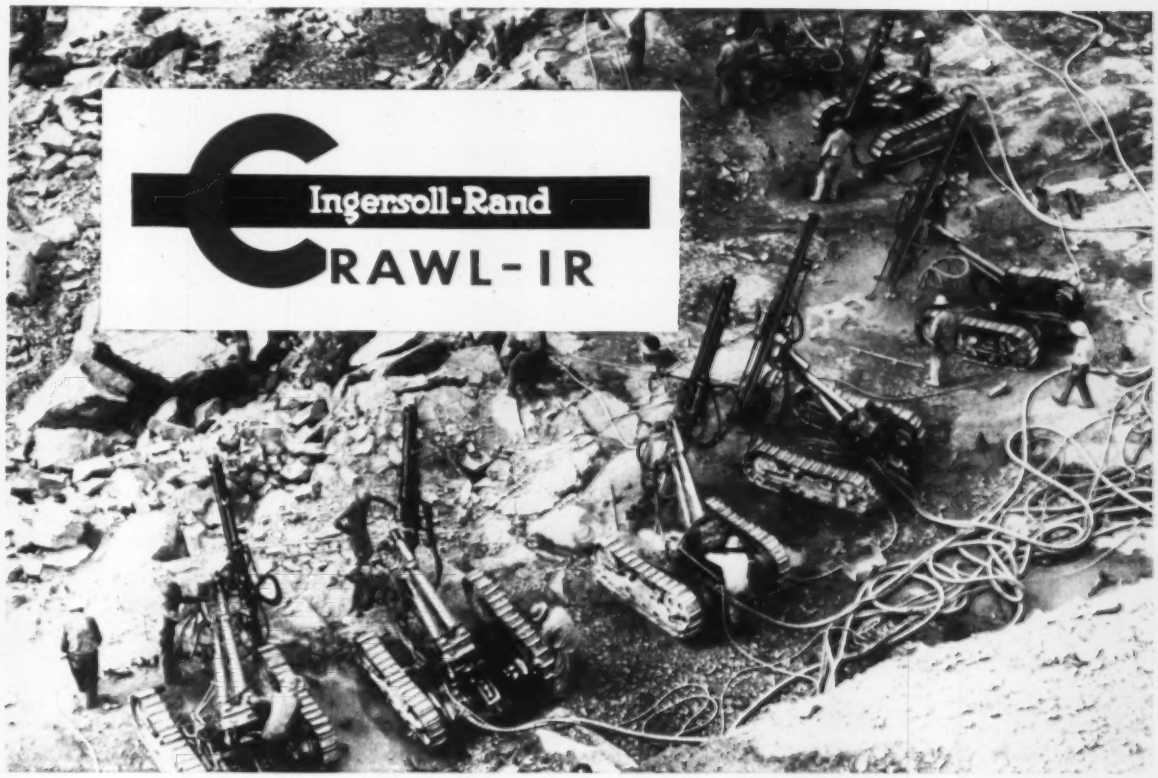
CRUSHED ROCK does the job if good bearing is less than 10 ft below pipe

Laying Pipe in the Everglades

Belle Glade, Fla., has found a way to construct sewers at a price it can afford. Set in the rich moist lands of the Everglades on Lake Okeechobee, the city is using a relatively inexpensive method of supporting sewers in the oozing mud where the water table is sometimes above ground surface.

Where good bearing is too deep, piles on 5-ft centers are placed under the pipe joints. Earth between the piles are excavated only to the bottom of the pipe and crushed rock is used to backfill around the pipe up to ground surface. Vitrified clay pipe in diameters varying between 8 in. and 15 in. will be used in the system.

Underground conditions are so var-



6 Crawl-IR drills deliver

POWER-HOUSE PUNCH

at Rocky Reach Dam

This concentrated battery of fast-acting, mobile drilling power is sinking 25 to 30 foot holes for the main power house excavation at Rocky Reach Dam on the Columbia River, north of Wenatchee, Washington. Under construction by the Rocky Reach Contractors, this major project is a joint venture sponsored by the L. E. Dixon Company of San Gabriel, Cal. For high sustained drilling speeds, these six Ingersoll-Rand Crawl-IR drills are using $2^{3}/_{4}$" Carset bits and I-R Carburized Drill Steels.

The Crawl-IR units are also used to drill 90 foot grout holes around the circumference of the coffer dam.

Ingersoll-Rand Crawl-IR drills are completely mechanized, heavy-duty units that convert setup time into *drilling time*. All motions—raise, lower, horizontal swing, extend, retract, and tower dump and swing—are powered by large, double-acting hydraulic cylinders, throttle controlled from a central operating station on each drill. Rugged I-R air traction motors, independently controlled, move the drill from place to place—permit fast, accurate hole spotting.

Ask your Ingersoll-Rand rock drill engineer for the inside story on why Crawl-IR is the strongest, most rugged crawler drill ever developed. Or send for new Bulletin No. 4208.

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A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR ROCK DRILLING

Ohio Thruway contractor uses Gulf products, keeps on

GULF MAKES THINGS

In March 1958, Allegheny Contracting Industries of Pittsburgh was awarded a sub-contract to pave 4.37 miles of 4-lane highway on the new Conneaut-Cincinnati Thruway. Target date for completion of their project —September 30, 1959.

A tight schedule. But abnormal weather made it much tighter. With one storm after another holding up operations—Allegheny couldn't work at all from December 1, 1958 to March 31, 1959—they had a lot of unavoidable lost time to make up.

But *avoidable* downtime was another matter. Allegheny kept this to an absolute minimum through heads-up preventive maintenance, including the servicing of their equipment with clean-burning Gulf fuels and clean-working Gulf lubricants.

According to Pete Kemmerling, Allegheny's General Superintendent, and E. L. Frazer, Construction Superintendent, their equipment is rolling up excellent performance records with Gulf fuels, oils and greases.

Their engines are running clean with maximum

Pouring 10" reinforced concrete pavement for a section of the new Ohio Freeway. Allegheny Contracting relies on Gulf fuels, lubricants and service to keep their heavy equipment on the move.

Shown above are (left) Pete Kemmerling, Allegheny's General Superintendent, and (right) William M. Stranko, Gulf Sales Representative. You can be sure of on-the-job service like this when you go Gulf.

schedule in spite of abnormal weather delays...

RUN BETTER!

power output. Their equipment stays on the job with a minimum of mechanical delays. Maintenance costs are being held down. And, in spite of many weather delays, the project is right on schedule.

In your projects, too, it will pay you to see how Gulf makes things run better with quality fuels, lubricants and on-the-job service. For prompt action, call your nearest Gulf office. Meanwhile, mail coupon for a copy of "Gulf Contractors' Guide"—the maintenance "bible" for heavy equipment.

GULF

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Please send "Gulf Contractors' Guide"

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SP 928

New James River Bridge Gets Better Protection Against Corrosion and Weather-Wear with...

One of the most important achievements in the construction of Virginia's new Richmond-Petersburg Turnpike is the James River Bridge. This 100-span highway viaduct, carrying two 40-foot parallel roadways, was designed by Parsons, Brinckerhoff, Hall and Macdonald, and Dr. D. B. Steinman.

• **Steelwork,** fabricated by the American Bridge Division, United States Steel Corporation, was shop-coated with Pittsburgh's X-L-O Structural Steel Primer. This was done to protect these steel shapes against corrosion during shipment and erection. Need of costly metal cleaning was eliminated. Uniform coverage was assured even over surface irregularities. Use of X-L-O permitted prompt shipment of these steel shapes regardless of weather, speeding up construction.

• **X-L-O also served** as an excellent foundation for final coats. This superior primer is available in combination of red lead and iron oxide, or 100% red lead. Pittsburgh's IRONHIDE® and METALHIDE®, in suitable colors, can be used for field painting.

• **Pittsburgh's long experience** in supplying protective finishes for structural steel shapes of all kinds can save you time and money. Why not ask us for advice or suggestions. Write, wire or phone Pittsburgh Plate Glass Company, Industrial Finishes, 1 Gateway Center, Pittsburgh, Pa.

Watch the Garry Moore Show—CBS-TV—Tuesday evenings.

PITTSBURGH INDUSTRIAL FINISHES

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PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

iable, no amount of boring can indicate what will be found 20 ft away. In some sections, 4-in. to 6-in.-thick rock layers are found at 4-ft depths, then soft muck, and at 10 ft, more rock. Sometimes solid rock is found just below the surface, while elsewhere rock won't be hit even at 12 ft.

When bedrock is 10 ft or less below the sewer, the trench is excavated to bedrock and backfilled with a soft limestone aggregate. This aggregate is laid and tamped in 6-in. layers to the top of the pipe. The remainder of the trench is filled with sand or pit-grade limestone aggregate. City-owned limestone quarries furnish the fill material.

Where bearing is more than 10 ft below the pipe, precast concrete piles are driven to rock and then cut off and topped with a concrete pier. Clay pipe is used in these areas.

Piling has not been used very much in the first stage of construction, but is expected to support a larger share of pipe in following stages.

Construction is in three stages. First stage will cost $730,000. It includes sewers for the downtown area and a master lift station to serve the entire completed sewer system. A sewage plant providing secondary treatment for a population of 10,000 is also under construction. Second and third stages of construction will be completed in five years to take in areas outside the heart of the city.

The whole system will cost an estimated $1.8 million.

Russell & Axon, consulting engineers, Daytona Beach, Fla., designed the system. Intercounty Construction Corp., Fort Lauderdale, Fla., is contractor.

Cement Silo Is Weighed To Figure Truckload

To figure how much cement goes into a truckload, Polish workers are weighing the cement silo before and after the truck is loaded, rather than weighing the truck itself.

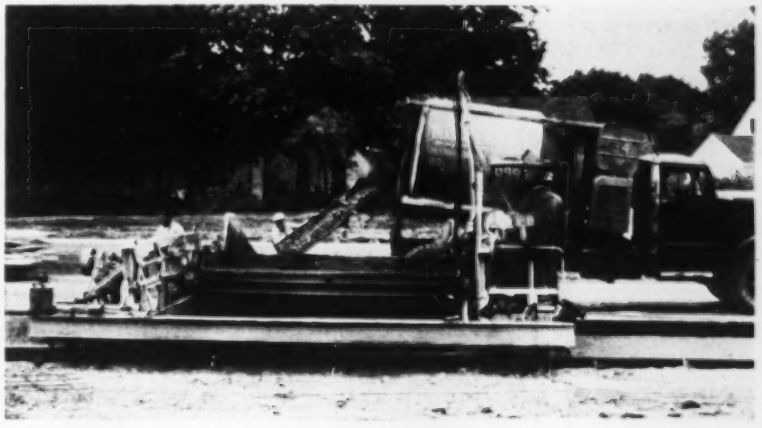
Jan Czudka of the Goleszow cement factory in Poland is credited with the weighing device.

The funnel-shaped silo is hung in a steel structure. Connection between silo and support is a bridge-type scale. A link transmits the reading of the scale to a floor-level indicator. The silo tank is filled by air.

Before each truckload, the silo tank is weighed. Then the truck is filled and the silo reweighed. Difference is weight of the truckload.

Advantages claimed for the system include simple scale design, more positive weight determination, lower construction cost.

DUMPCRETE CONCRETE SPREADER WORKS FAST WITH TRUCK MIXERS FOR WIDENING AND STREET PAVING!



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Speed paving work with transit-mix trucks on widening or street jobs with a Dumpcrete Concrete Spreader. New single-lane model spreads up to 16 ft widths; adjustable in 6-inch increments from 11 to 16 ft. Capacity ranges from 180 to 260 cu. yds. per hour. Places full depth, base course or top course. Hydraulic controls. Handles concrete of lowest workable slumps. Send for new catalog with specifications and drawings.

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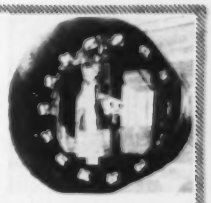
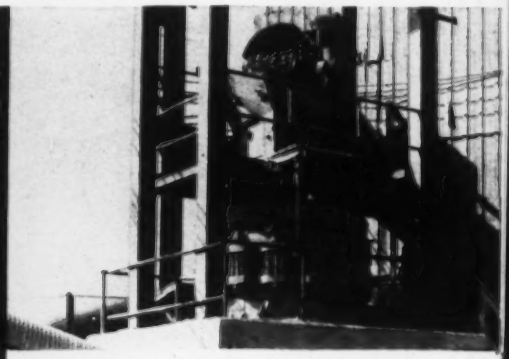


Bulletin No. 23 shows installations of Mayo shields, cylindrical air locks, lock doors, medical locks and tunnel cars. Send for your free copy.

MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

BIG TONNAGES of quality aggregate produced at low cost with SYMONS® Cone Crushers

Typical of today's modern highway construction is this view of the modern Freeway in Oakland, California, showing three levels of highway structure over two levels of railroad.
(Photo courtesy California Division of Highways)



for STATIONARY service . . . Symons Cone Crushers are built in Standard, Short Head, and Intermediate types, with crushing heads from 22" to 7' in diameter—in capacities ranging to 900 or more tons per hour, for primary, secondary and finer reductions.

for PORTABLE service . . . Symons Cone Crushers are being used in increasing numbers for portable and semiportable crushing plants. Illustrated is a typical Cedarapids® Intermediate Scalping Unit, using a 4-ft. Symons Cone Crusher. Unit is serving a large Midwest sand and gravel producer.

C-159

The big tonnages of specification aggregate, bituminous mixes, crushed sand and cement required to meet the ever-increasing needs of the construction industry are produced by Symons Cone Crushers at low cost. Good reasons why these efficient crushers are the leading choice of producers and contractors building highways, dams and hydro projects, bridges, as well as commercial building construction.

It will pay you to specify and use Symons Cone Crushers for both stationary and portable service. *Write for descriptive literature.*

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Research

Nuclear Energy Device Tests for Wood Soundness

Nuclear energy is being used by the New York Central Railroad for in-place testing of the soundness of wooden railroad ties.

Potential uses of the tie tester could be in determining the fitness of piles, floors and beams and other timber structures.

The device—a density tester—uses "back-scattering" of low-level gamma rays emanating from a radioactive source. These rays are reflected from the interior of the tested material, back to a radiation counting device. A sound—or denser—tie reflects more rays than one whose interior is porous or rotted.

The unit consists of a back pack and a pistol grip probe. The probe contains a meter for readings.

The tester was developed by the New York Central Research Center, Cleveland, Ohio, and Nuclear Science & Engineering Corp., Pittsburgh.

Russian Machine Cuts Vertical Mine Shafts

The Rumanian technical weekly magazine Tehnika Noua reports the Russians have put together a three-part, 155-ton machine for mechanical digging of vertical mine shafts. The complex assembly will bite out 2,100 cu ft of material per hour working down a 20-ft-wide shaft, "in medium-hard ground formations."

Three main components are a planetary cutting mechanism at the bottom, a guide frame for the machine, including power unit, controls and platforms for the operators, and a hoisting mechanism at the top of the machine. The report did not mention either the depth to which the machine would dig or where in the USSR it is in operation. Nor was there any information on how the shaft is braced above the working level.

Laughing Gas Pinpoints Leaks in Buried Pipes

Nitrous oxide, the familiar laughing gas used as an anaesthetic by dentists, also has possibilities as a money-saving tracer for underground pipe leaks.

Southwest Research Institute, San Antonio, Tex., reports that after a water solution of the colorless gas is injected into a pipeline, an infrared analyzer can readily detect the tracer gas at ground level above any leaks that might exist.

Low gas concentration and water leakage as low as two gallons per hour

Jennite J-16 PROTECTS ASPHALT

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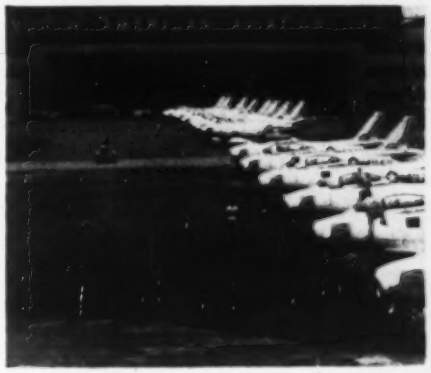

At Columbus... 398,000 sq. yds. of fueling, service and parking areas are protected with Jennite. Note contrast between Jennite area and unsealed section in foreground ...after 3 years' service.

Airfields, like your plant parking lot and home driveway, are paved with asphalt. Jennite liquid surface seal doubles asphalt service life, reduces upkeep costs.

Jenniting stops destructive effects of gasoline and oil, seals out frost... eliminates crumbling... retards drying action of sun. The attractive, satin black Jennite surface is tough, easy-to-clean... a sound maintenance investment.

For details, write for Bulletin L-352-55.

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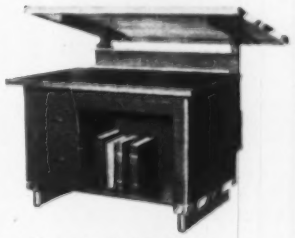

FEATURING:

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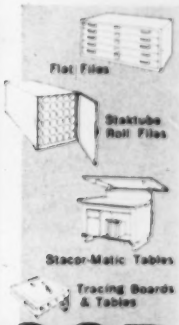

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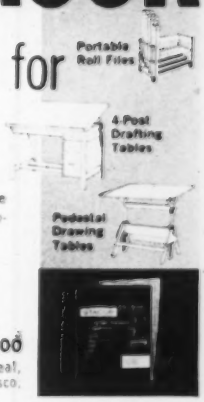

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Type No. 6DS waterstops will effectively handle a ⅛" direct-shear in either direction.

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ALSO AVAILABLE...

"Sealtight" PVC Waterstops are available in a wide range of types and sizes ... widths from 3¾" to 9". There's a type and size to meet specific job requirements. Shipped in 50 ft. coils. Easy to install ... quickly spliced on the job without special skill or equipment. Write today for complete information ... request Bulletin No. 70.

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produced detectable concentrations of gas at ground surface in both laboratory and field tests, the institute says. Gas escaping at rates as low as 0.007 lb per hour were detected.

The researchers tested the method only for technical feasibility. However, they believe it will be quicker and cheaper than standard hydrostatic testing.

The institute reports that the technique has aroused interest among pipeline builders, gas distributors and other companies.

Fort Randall Flow Tests Not a Complete Washout

Although not all the planned hydraulic tests in one of the Fort Randall Dam tunnels were accomplished last month, 25 steps in the 38-step schedule were performed before the equipment broke down. (See ENR Aug. 20, p. 28 and Aug. 27, p. 19.)

All tests in the scheduled four-day research program were halted during the third day when a pitot strut containing delicate instruments tore loose under excessive water velocity and pressure.

The tests were designed to investigate basic fluid mechanics and flow phenomena. There were five main areas of investigation: turbulence characteristics in large-diameter conduits; velocity distribution across the conduits and in boundary zones; friction and entrance losses; regulating gate discharge coefficients; and instrument performance.

The data gained will be of considerable importance in the design and construction of large conduits. The Corps of Engineers will release results of the tests to all Corps installations and to the engineering profession.

AEC Publishes Who's-Who Of Atom-Power Plants

The Atomic Energy Commission has published a 32-page booklet listing all nuclear reactors built, building or in planning stages throughout the U. S. The publication covers all projects up through June 30 of this year.

Six sets of tables make up the report, broken into areas covering civilian power and propulsion reactors, experimental civilian reactors, military reactors, production reactors, reactors built for export and "critical" assemblies for experimental work.

Data includes the type of reactor, its location, the owner, builder power rating and startup date. Copies of the report, to be issued semiannually, are available from the AEC, Technical Information Service Extension, P. O. Box 62, Oak Ridge, Tenn.

Here's help for

HIGHWAY PLANNERS

Monotube poles, piles and overhead sign supports, used on many of the nation's leading highways, help provide increased driver safety, improved traffic flow, and economy in various phases of highway construction.

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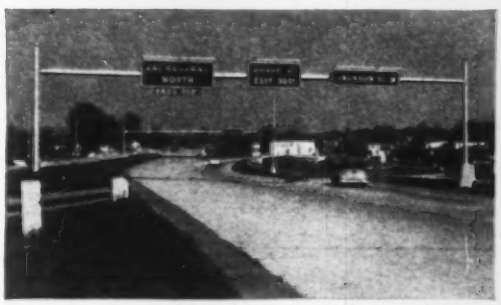
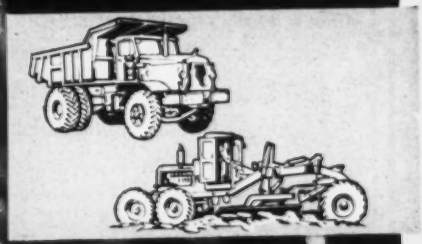
MONOTUBE LIGHTING POLES

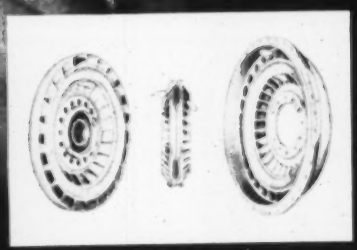


MONOTUBE SIGN SUPPORTS

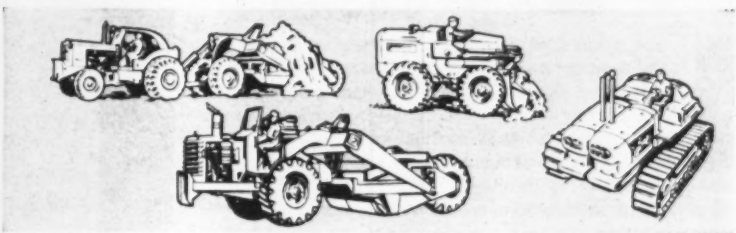
MONOTUBE FOUNDATION PILES

What's it costing





you to keep the "stick"



EVEN IF YOU HAVE only top operators on all your equipment, the cost of keeping a stick-shift comes to a pretty penny: too-frequent, high repair bills for unavoidably shock-loaded drive lines and axles—engines being overhauled twice as often as necessary at $1,200 to $1,500 per overhaul—and, of course, those incessant clutch repairs and replacements.

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And remember—TORQMATIC is available in almost every type—and well over 100 makes—of equipment. It's been proved—on years of tough jobs—far beyond any other hydraulic transmission. Just see your dealer—or write Allison for details.

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Built stronger to last longer—Allison casts its converter for extra strength, greater precision—and the converter is *integrated* with the transmission for a neat, easily serviced installation.

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All-New Nylon U. S. Royal Super Con-Trak-Tor with ...69% to 95% Longer Tire Life!

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New S.R.T.—as shown here in the X-Ray photo—is a **tough** reinforcement of tread, shoulder and buttress areas. It consists of several thick layers of tread rubber containing thousands of short lengths of brass-coated steel filaments. This forms a virtually **impenetrable** mat between the tread and nylon cord body and extends down through the shoulder and buttress areas providing **positive** protection against combination cut-and-impact failures!

Add to exclusive Steel Reinforced Tread... 50% deeper tread at center..., far deeper tread at shoulder... 25% more ground contact... Double-Strength Nylon and you have the world's **toughest** off-road tire! No wonder the great new U. S. Royal Super Con-Trak-Tor-S.R.T. outperformed **every** tire put against it—by the widest of margins—up to 95%! Can you afford less on **your** jobs?

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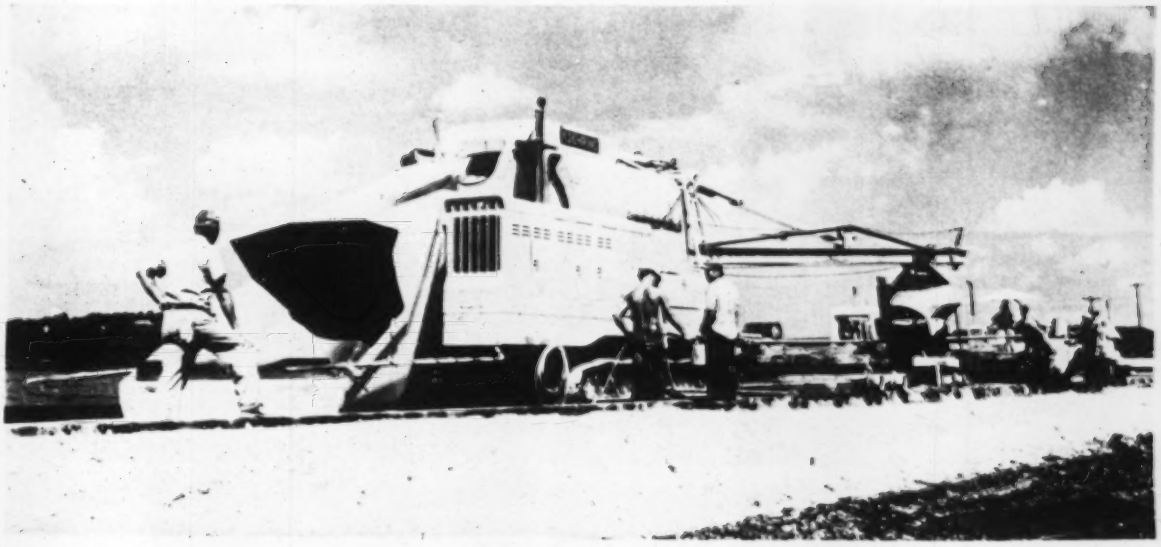

Now, Triple-Drum Concrete Paver

New vistas have been opened up for the concrete paving contractor by the introduction of a paver featuring a three-compartment mixing drum. The giant machine is 74 ft long from end of skip to end of boom, and 11.5 ft wide.

The 34E Tribatch Paver is engineered to produce 43% more concrete than a conventional 34E Twinbatch Paver, according to its manufacturer, the Koehring Co. It costs $82,500.

Design and operational details of the machine recently were disclosed at Koehring's proving grounds. This was followed by a visit to a nearby paving contract by the Druml Co., Milwaukee, where one of the new pavers was being put through its paces.

The new paver produces two 37.4-cu-ft batches of concrete per minute. Based on a 60-second mixing time, cycle time is 29 seconds. This means a top capacity of 124 batches or 172 cu yd of concrete per hour. At this rate nearly a half-mile (2,580 lin ft) of 24-ft-wide, 9-in-thick concrete pavement could be laid in a 10-hr day. (The standard 37.4-cu-ft batch is based on a nominal 34-cu-ft batch plus a 10% allowable overrun.)

By comparison, the 34E Twinbatch Paver, with a 42-sec cycle time, has a top potential capacity of 87 batches or 120 cu yd per hour.

The secret of the high capacity of the 34E Tribatch Paver is in the continuous assembly-line production of its three-compartment mixing drum.

After the skip has been raised, it discharges in three seconds. The 37.4 cu yd of aggregates, cement and water is mixed 16 seconds in the first compartment of the revolving drum. It is discharged into the second compartment in nine seconds. There it is mixed for 13 seconds. Then it is transferred into the third, or rear, compartment in nine seconds and mixed for 13 seconds.

The three mixing periods plus the two nine-second transfer intervals add up to a total mixing time of 60 seconds. During normal operations, the skip will be on the ground for 18 seconds.

Where required mixing time is greater than 60 seconds, mixing cycle is adjusted accordingly.

The paver is designed to be integrated in any conventional train of finishing equipment. Although its potential output is 43% more than a 34E dual-drum paver, with the exception of more batch trucks, no additional batching or finishing equipment is required. On Druml's paving job, a screed, spreader, transverse finisher, bullfloat, burlap drag and curing compound spray machine had no trouble keeping up.

Normally, only one man is needed to operate the paver. On some jobs, however, a skip man is useful.

All functions of the mixing cycle—raising-charging operation of transfer chutes and discharge chute—are handled automatically by an electric batchmeter. This leaves the operator free to operate the boom and bucket, and to move the machine.

A precision-injection water system is designed for both accuracy and speed in measuring and charging water into the mixer.

The 34E Tribatch Paver is replete with safety devices. A panel at the operator's position provides him with emergency manual overrides on all batchmeter functions.

The hydraulically operated skip is raised automatically through the batchmeter. But this is done only after the skip man signals that the batch truck is clear. This he does by punching a button on his control box. Before the empty skip starts down a horn sounds a raucous warning.

Both the skip man and the paver operator have access to a "stop" button, which will freeze the skip in any position.

The electric batchmeter is constructed so that should any operation fail to function, all operations behind it will become static.

Also, the batchmeter will not allow the final discharge chute to open until the bucket is in position to receive the mixed concrete.

The 34E Tribatch Paver mounts an elevating 37.5-ft boom, to place concrete on the far side of a 30-ft-wide pavement. It can be raised 30 deg to the horizontal, giving a 15-ft clearance under the bucket doors. A 30-in. clearance is provided between the bottom of the bucket and the subgrade for constructing thick airfield pavements.

Power for the paver is furnished by a 219-hp diesel engine. The 12-ft-4-in.-long, 77-in.-dia mixing drum operates at 15 rpm loaded. The 55-cu-ft boom bucket for placing concrete in the road forms has double doors, 60 in. wide. Operating speed of bucket is 240 fpm.

Crawlers are 17 ft 8 in. long. Traction speed, forward and reverse, is 1 mph. Koehring Co., 3026 Concordia Ave., Milwaukee 16, Wis.

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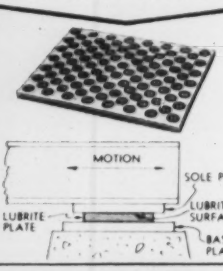

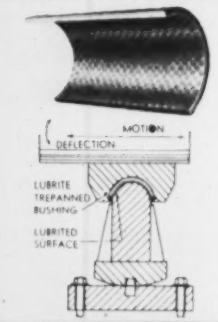

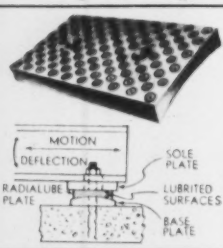

When expansion, contraction and or rotation of structural members are factors in the design of any bridge, overpass, building or other construction, Lubrite offers many distinct and important advantages. Specifically Lubrite permits the use of simplified designs, cuts construction costs substantially, virtually eliminates maintenance and offers a low coefficient of friction. Assure better results, longer life and unequalled performance — specify Lubrite — over 50 years of success "where others have failed"

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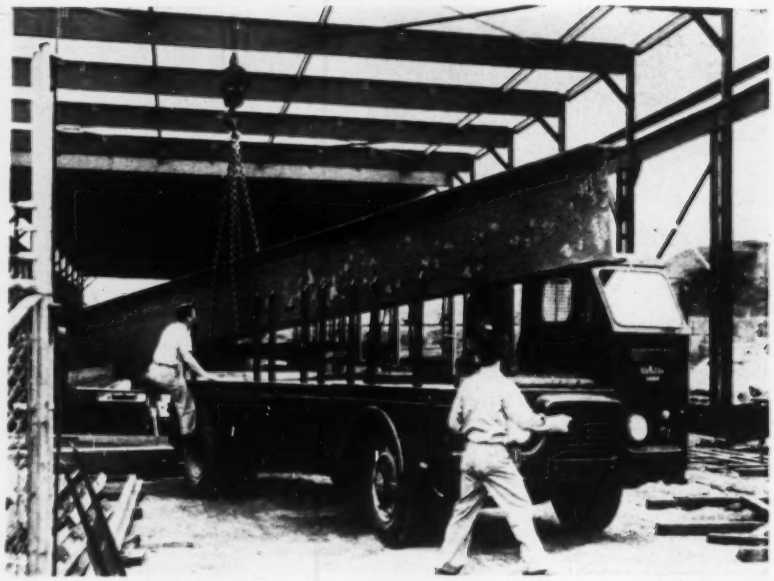


Cab Cut to Get Length

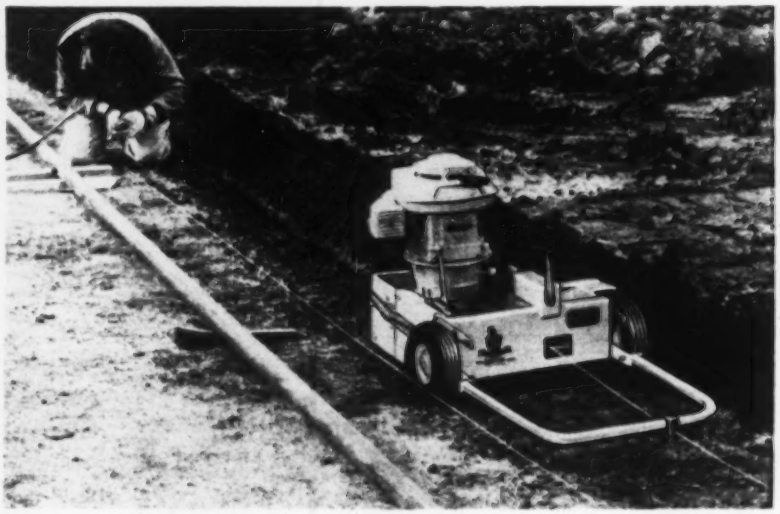
A White Motor truck is practically all deck to handle long lengths of steel, wood and other materials. The one-man cab takes up only 5.6% of the truck's surface area and it can be tilted for engine access.

The truck has 195 sq ft of flatbed deck and a 28½-ft length on a 163½-in. wheelbase. The extra length comes from extending the deck alongside the cab.

Deck is 1½-in. thick oak, equipped with stakes.

Loading height is standard. Steel walls protect the cab against damage by the load.

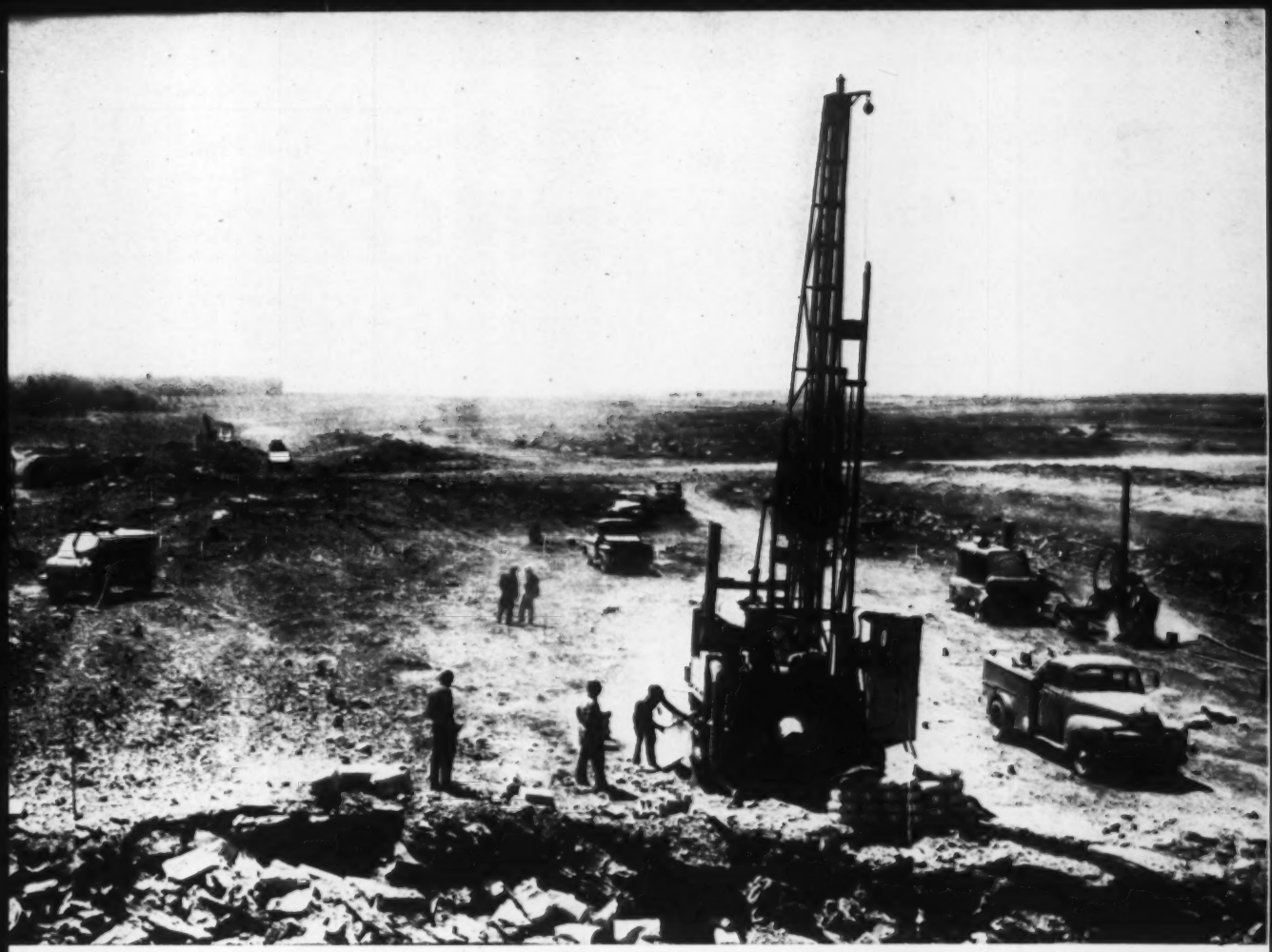
The truck is powered by a 145-hp gasoline engine; it has a five-speed transmission and power steering. Gross vehicle weight is rated at 28,000 lb. WHITE MOTOR CO., 842 E. 79TH ST., CLEVELAND 1, OHIO.



Trencher Fends for Itself

The self-propelled Davis Pup Trencher digs 3 in. wide and 3 ft deep. The winch-driven trencher can be started, set at the desired depth and left unattended while it is digging. DAVIS MFG., INC., 1301 S. HANDLEY, WICHITA, KAN.

(*New Products continued p. 82*)



Working on east rock channel, which will divert Horsepen Run from the path of the 2-mile-long runways. Contractor is C. J. Langenfelder & Son, Inc., Baltimore, Maryland.

2½ miles of rock channel to blast . . . on time and economically . . . they use Du Pont Explosives

This is Chantilly, Virginia, site of the new Dulles International Airport for Washington, D. C. Preparation required two channels for stream relocation and drainage, totaling 4 miles in length with over 14,000 linear feet in rock. Total rock excavation estimated at 450,000 cu. yds.

Keeping this kind of work on schedule calls for prompt delivery of explosives the men can count on, for the kind of technical service that Du Pont provides to help plan the way.

If you have a project that covers a lot of ground, such as airport or highway construction, let your Du Pont representative help you size up the job. He can advise you on just the right products to use, drawing on this country's oldest line of explosives and greatest length of experience in blasting.

Call him direct, or write to Du Pont, Explosives Department, 6440 Nemours Building, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

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Bruning's all-new Neoglide drafters literally help draftsmen *straighten up* and do faster, better work.* They provide complete maneuverability on any board *at any angle* without adjustment! Reinforced U-beam construction assures rigidity, strength, and accuracy. Resistance-free movement of vertical beam and hidden counterweight provide fast "floating" action. Touch-control protractor head gives automatic, pin-point angle selection. Mail coupon, now, for *straight* facts about Neoglide savings.

*Study of 300 draftsmen showed 35% savings in drawing time—1/5 the backaches—on vertical or near vertical boards.

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Charles Bruning Company, Inc., Dept. 10-V
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Offices in Principal U.S. Cities
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Please send me more information about your new Neoglide drafters.

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Company _____

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Seamless Steel Pipe For Insulated Systems

Seamless steel pipe in insulated piping systems offers high thermal efficiency combined with thermal strength and durability, the manufacturer says.

Completely prefabricated pipe distribution systems come tailored to specifications. The system may consist of a single pipe or multiple pipes for overload or underground transmission of hot water, steam, viscous fluids, process liquids and refrigerants.

The insulated pipes are housed in asphalt-coated corrugated galvanized steel conduit. RIC-WIL, INC., BARBERTON, OHIO.

New Products Briefs . . .

• **Vibrators**—Cleveland RC vibrator line now available in 3-phase, a-c current in all common voltages. Comes completely equipped, ready to install. CLEVELAND VIBRATOR CO., CLEVELAND 13, OHIO.

• **Navigation aid**—A bridge navigation light is fitted with lamps that have a burning life of 2,500 hours each. Light may be pedestal or swivel mounted on bridge abutments or superstructure. WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. J.

• **Warning lamp**—The D-257 dual-faced emergency warning lamp has 7-in. shatter-proof lenses to provide warning signals in two directions. Made for mounting on trucks and snowplows. GROTE MFG. CO., BELLEVUE, KY.

• **Dirt protection**—Glaize is sprayed on equipment and trucks to form a protective film against dirt. Road grit, dirt and hardened concrete wash off with plain water, the manufacturer claims. FORRER'S PRODUCTS FOR MASONRY, 2225 N. HUMBOLDT AVE., MILWAUKEE 12, WIS.

• **Pipe repair**—The Heavy Duty Patchmaster is an emergency or permanent pipe repair clamp. Pad on the inside is made to withstand high clamping pressures without extruding. Comes for pipe sizes ½ in. through 8 in., and in widths of 3, 6, 9 and 12 in. MARMAN DIV., AEROQUIP CORP., 11214 EXPOSITION BLVD., LOS ANGELES 64, CALIF.

• **Pump**—An air-operated pump is designed to dispense gasoline, diesel oil and water. The double-acting pump delivers 10 to 12 gal per minute with 50 psi of air pressure. It measures 21½ in. high, 5 in. wide. LINCOLN ENGINEERING CO., 4010 GOODFELLOW AVE., ST. LOUIS 20, MO.

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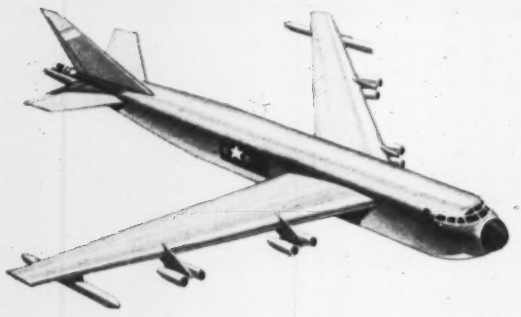

At Kinross Air Force Base...

helps the

THE "JET AGE" IS HERE. And with it is the problem of rebuilding airports to provide the longer, stronger, heavier runways these big jets need. That's why airport builders and designers are planning thicker, stronger airfield pavements with extra-heavy reinforcement . . . pavements that will match or exceed present jet requirements. And that's why the heaviest welded wire fabric ever produced was installed at the vital Kinross Air Force Base in Michigan.

Operational jets in commercial service now impose gear loadings in the neighborhood of 130,000 lbs., with gross weights of 295,000 lbs. Future models may go even higher. For that reason, only reinforced concrete provides the added strength to meet the unusually heavy and severe requirements of the "jet age." Specify USS American Welded Wire Fabric for reinforcing all runways, high speed turnoffs, taxiways, and service pads . . . get these important advantages:

- USS American Welded Wire Fabric distributes heavy wheel loadings over a larger area to prevent harmful overloads at any one point. Impact, shock, suddenly applied or released loads such as occur during landings and take-offs are more uniformly "absorbed" by each slab. Reinforced concrete slabs are 30% stronger than unreinforced slabs of equal thickness.
- USS American Welded Wire Fabric prevents harmful cracking from developing because of its uniformly spaced high-tensile-strength welded steel wire construction. Its action "knits" a slab together.
- USS American Welded Wire Fabric unifies the action of any slab when it expands and contracts due to temperature change.
- Longer, wider slabs can be laid when USS American Welded Wire Fabric is used. This means fewer joints, fewer load transfer assemblies. The reduction in the number of joints not only means economy, but also a smoother, safer landing surface.
- When existing airfield pavements must be strengthened, USS American Welded Wire Fabric reinforced concrete overlays will produce unbroken grade lines and provide additional strength. Thus, maximum economy is achieved.

Specify USS American Welded Wire Fabric. It's available in a wide variety of styles, lengths, and widths . . . in wire sizes from ½" diameter to 16 ga. and in longitudinal or transverse wire intervals of 2" to 16". The engineers at American Steel & Wire will be glad to tell you more about the application possibilities of fabric and how it can serve your needs. Get in touch with American Steel & Wire, Dept. 9320, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

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Contractor: Loselle Construction, Inc., Wyandotte, Michigan
Paving Material Supplier: Scioto Supply Company, Lansing, Michigan
Design and Supervision: Corps of Engineers, U. S. Army

USS American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
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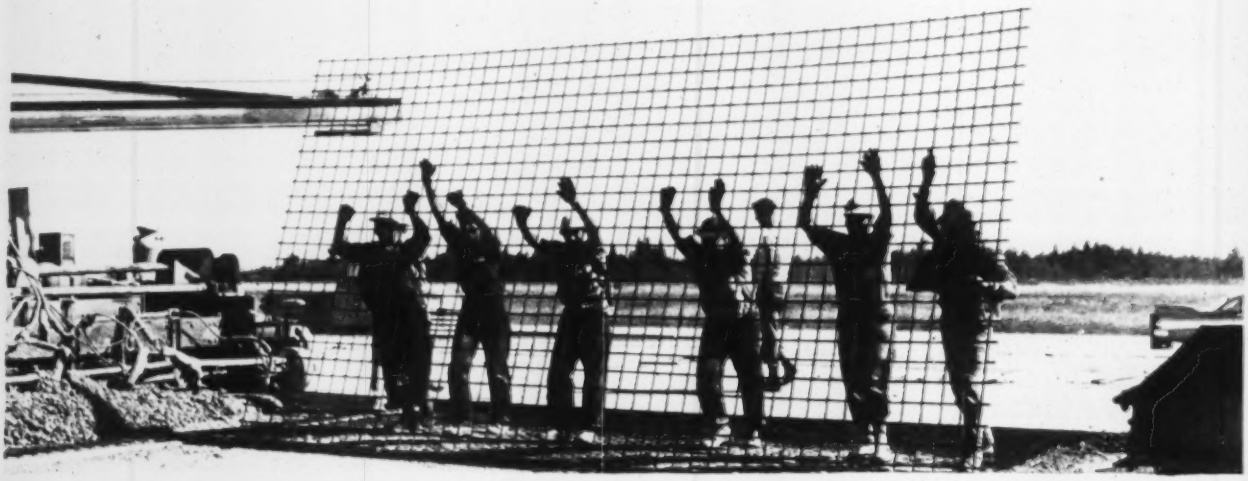
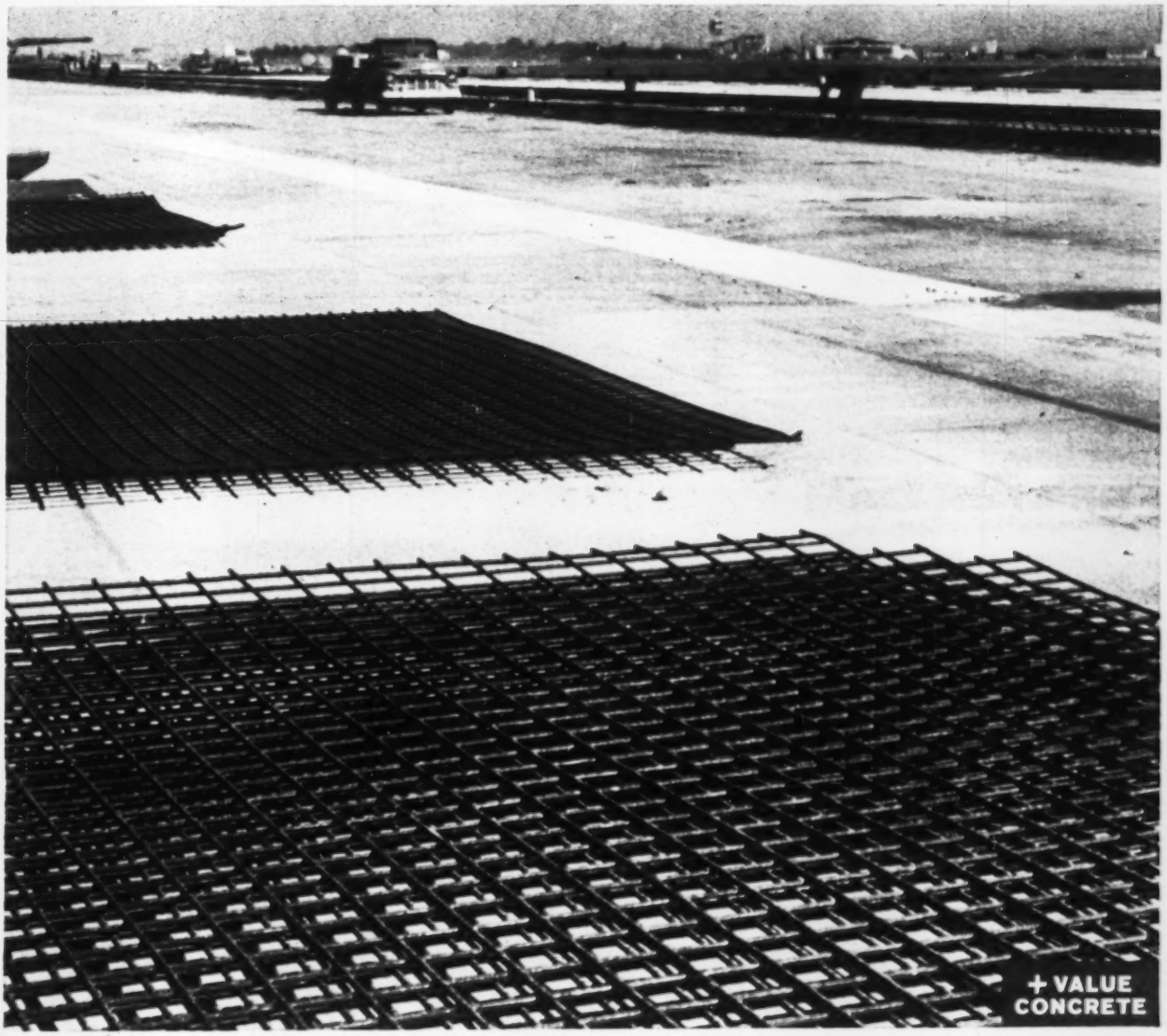
United States Steel Export Company, Distributors Abroad

At Kinross Air Force Base, workmen are installing a section of USS American Welded Wire Fabric—Style 55-7.07.0 (7.0 Gauge is 0.490" Diameter Wires). USS American Welded Wire Fabric is entirely fabricated by electrically welding all intersections of the high strength steel wires. This insures positive placement of the steel in the slab and eliminates costly field tying and extra handling.



World's heaviest Welded Wire Fabric big jets land safely!



Under the direction of the U. S. Corps of Engineers, another new United States Air Force Base is made ready to join our air defense network. It is Kinross, located on the Upper Peninsula of Michigan. This base was expanded to handle bigger, heavier modern jet aircraft. USS American Welded Wire Fabric was used in the rigid overlays on the strengthened and lengthened runways.

USS American Welded Wire Fabric

BETTER DAM MACHINE

Doubling in dragline and concrete bucket service, this Marion 362 set a fast work pace on a dam in Wisconsin. Its job: to help build a new dam and rip out an old one. The project involved 14,000 yards of concrete.

The Marion handled a 1½ yard drag bucket for excavation and a 1 yard bucket for concrete, using a 70 foot boom.

Smooth, fast-acting Marionair control and self-cleaning crawlers that resist clogging in the worst footing are among the many plus features of this and other sizes of Marion machines for contractors. See your nearest Marion Distributor for details.

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Arranging big construction deals is old stuff for Jack Struthers, now . . .

Veteran Pile Driver Steps Down

A pioneer West Coast builder—Otis C. "Jack" Struthers—is retiring after 36 years as head of West Coast operations for Raymond Concrete Pile Co.—now Raymond International, Inc.

Jack's career with Raymond has spanned the West's greatest, most frenzied construction eras. Besides driving millions of piles, Raymond in his time has participated in great bridge building projects and several World War II shipyards. Jack Struthers numbers among his contemporaries and former joint-venture partners such giants in the construction industry as Henry Kaiser, Steve Bechtel and Jack Pomeroy.

Jack was still a teenager in 1907 when he came to the West Coast for the first time, on surveys for the Western Pacific Railroad. He spent the next 15 years closer to his Kansas home, on construction work—industrial plants, oil tanks, pipelines and grain elevators.

"I started when a mule team and Fresno scraper was a big improvement over hand work," he says. "Now a contractor that doesn't keep up with developments in the newest 30-cu-yd scrapers will lose out on jobs."

In 1923, Jack Struthers decided there was tremendous opportunity in the West Coast building boom. He sold Raymond on the idea of establishing a West Coast operation. It was to be managed by him on a percentage—an arrangement that continued for more than 20 years until one prosperous year when it was discovered that Jack Struthers was making more than some of Raymond's top officials.

Jack's headquarters was in Los Angeles. But, he points out, to be successful in the construction business in those days you also had to have a San Francisco "office" in the lobby of the Palace Hotel. Among the big deals stirred up there were arrangements for both the Carquinez and San Mateo-Hayward bridges. (Raymond never built the Carquinez Bridge, but did win a $187,000 settlement after its contract was broken.)

The San Mateo-Hayward Bridge included more than seven miles of concrete trestle. Precast slabs 30 to 35 ft long were placed by floating rigs on concrete bents formed of four precast piles and a cast-in-place cap.

The bridge was the longest overwater structure of its type until recently when Raymond and associates built the 24-mile Lake Pontchartrain Causeway in Louisiana.

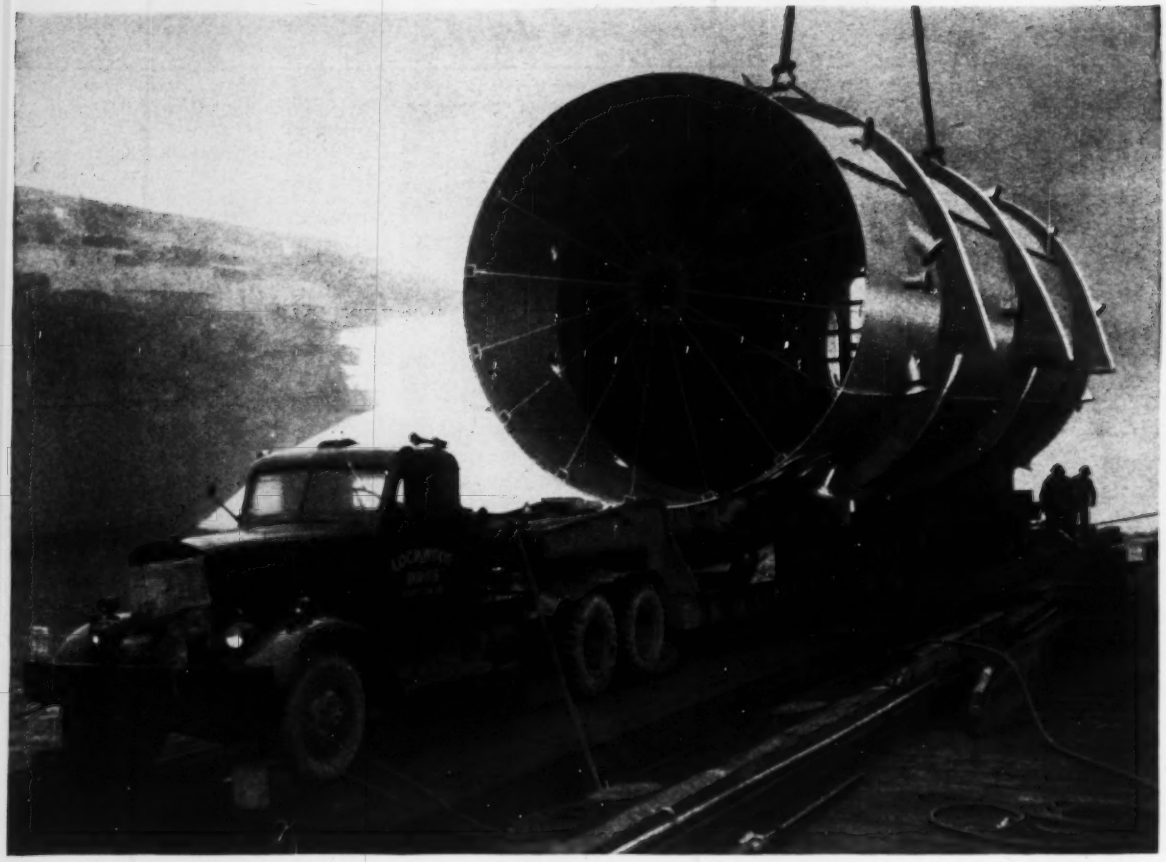
Raymond's handling of the San Mateo Bridge job and Jack Struthers' Palace Hotel lobby office brought him and Raymond to the attention of other western contractors. Thus, in the early thirties when bids were about to be opened for the San Francisco-Oakland Bay Bridge, Raymond was one of the organizers of a joint venture called Bridge Builders Inc. Although unsuccessful on the West Bay substructure bidding, this joint venture—the first one Raymond participated in on the West Coast—was low bidder on the East Bay substructure work.

In addition to Raymond, it included W. A. Bechtel Co. (now Bechtel Corp.), Henry J. Kaiser, Warren Bros. Co., Missouri Valley Bridge and Iron Co., Dravo Contracting Co., and Utah Construction Co. Henry Kaiser was president of the joint venture with Steve Bechtel as treasurer and his brother K. K. Bechtel as secretary. M. M. Upson, then president of Raymond, was vice president but Jack Struthers represented Raymond on the board of directors.

Raymond also joint ventured with J. H. Pomeroy Co. on the approaches of the Golden Gate Bridge. Thus the company has been involved in most of the great Bay Area bridge structures.

At the start of World War II Raymond built three major West Coast shipyards, two in the Los Angeles area and one in the San Francisco area. One of the Los Angeles shipyards required 58,000 piles. To furnish these, Struthers bought every available creosoted pile on the Pacific Coast and even imported some southern pine piles from Louisiana.

The shipway deck at this yard was made of 6-in. plank. Raymond took



Unusual Handling Technique – Road clearances to Langley Field were not suitable for transporting the 53-foot long, 123-ton heat accumulator so Newport News made special loading and installation arrangements. The huge shell was first loaded on a "barged" trailer-truck and shipped to a location near the site. From that point it was pulled off by use of a ramp and hauled directly to the site where it was jacked into position.

Tap the resources of Newport News to fill an order like this one

This 123-ton, stainless clad Carilloy T-1 steel heat accumulator, (probably the first vessel made of this type steel), was built for the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics. This *special purpose* unit incorporates 70 years of metal working experience. Decades of machining, welding, stress relieving . . . fabricating millions of tons of steel into thousands of diverse products.

This experience goes into every unit built by Newport News . . .

Into products that range from small components of textile machines, to the giant 165,000 hp hydraulic turbines at Grand Coulee. Newport News is a source for standard or special plate fabrication, castings, forgings, weldments and sub-assemblies. Particularly, large units . . . single or multiple. Your inquiries are invited.

A brand new, easy-to-read, illustrated booklet, *Facilities and Products* will show you scores of ways in which Newport News can help you. Send for it today.

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Engineers – Desirable positions available at Newport News for Designers and Engineers in many categories. Address inquiries to Employment Manager.

over two ships for the lumber haul from Oregon. Struthers scouted the western market and bought 50 pneumatic hammers to drive the 60 penny spikes needed to hold the heavy planking down. This yard had four ships on the way before the last spike was driven.

Mr. Struthers' work has been his greatest interest, and he doesn't expect to retire completely from the construction and engineering field. "But I do expect to take some long-deferred trips and do some research work that I couldn't do when employed," he says. "Anyone looking for me will have to look hard," he observes.

Struthers has managed the several Raymond West Coast offices from Los Angeles with the title of assistant vice president. Replacing him in charge of the western work will be C. R. Graff, a Harvard-educated, registered civil engineer, who has been with Raymond on the West Coast since World War II days. Graff has been district manager in northern California for several years and will continue to headquarter in the Bay Area. Taking over as district manager for Raymond in southern California will be A. Pierce Godley. Harry Wall will be district manager in Salt Lake City.

Howard Laverty Retires; Delaware FHA Architect

Howard J. Laverty, a veteran of 25 years with the government retired as Federal Housing Administration chief architect at the Delaware insuring office.

He joined the FHA 14 years ago, working first in the Philadelphia insuring office and then moving to the Delaware district in 1952. His compilations have contributed heavily to the new minimum property standards recently adopted in Wilmington, Del.

Careers

Public Works

R. S. Johnson has been transferred to Columbus, Ohio, as division engineer for the U. S. Bureau of Public Roads. He had been with the State Department's International Cooperation Administration in the Philippines. Mr. Johnson succeeds **August Schofer,** who has been named regional engineer for the bureau at Hagerstown, Md.

Max Holland, city manager of Camden, S. C., has been named city manager of Kinston, N. C. He succeeds **Roy Robinson** who resigned.

James C. Echols takes over as district traffic engineer in Bristol, Va. He replaces **Robert A. Hubbard,** who is now urban traffic engineer in Richmond, Va.

(Men and Jobs continued p. 90)

Blok-Joint is the cross shaped rubber extrusion used to make control joints in masonry walls. Used with ordinary metal sash blocks—no special blocks—no cutting or sawing—no bond breaking paper and mortar fill required. Simply slip Blok-Joint into the sash groove and calk the joint when the wall is completed.

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Side View

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Large, well defined, squared notches to give a deeper, stronger mortar grip than with conventional reinforcing with superficial nicks and burrs. No sharp edges to irritate hands. Butt welded to lay flat. Cuts and bends easily.

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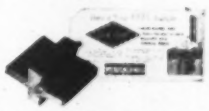

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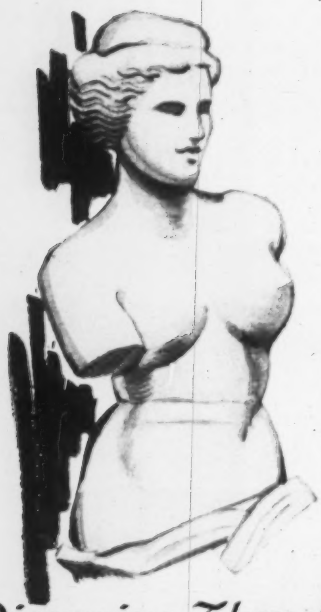

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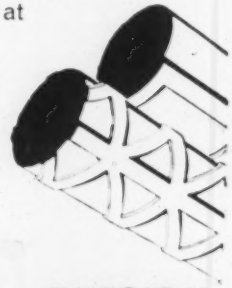

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. . . Men and Jobs

John Mayo is acting city engineer for Yakima, Wash., replacing **Sam Hobbs,** who resigned. Mr. Mayo will also continue as supervisor of public works.

Frank P. McClure, formerly with Jones, Henry and Williams, Toledo, Ohio, consulting engineer firm, has been named sanitary engineer for Sandusky, Ohio.

Brig. Gen. William F. Cassidy takes over as the Army's assistant chief of engineers for civil works. He will supervise the Army's nationwide flood control, navigation and related water resource development program. General Cassidy succeeds **Brig. Gen. John L. Person,** who had retired after 30 years of service.

Joseph L. Shoemaker heads the Richmond, Va., division of construction. He has been with the city for 22 years, as maintenance engineer.

A new seven man architectural review board has been appointed in Maryland. The board will check preliminary plans for major state projects. Board members: **Wilmer Chance** of Lucius and Edward White Associates; **Peter G. Christie** of Wilson and Christie; **Francis H. Jencks** of Wrenn and Jencks; **Jackson P. Ketcham** of Tyler, Ketcham and Myers; **Charles Lamb** of Rogers, Taliaferro and Lamb; **Charles M. Nes, Jr.** of Fisher, Nes, Campbell and Associates, and **Paul L. Gaudreau** of Gaudreau and Gaudreau.

S. C. Halfhill, engineer, and **R. C. Hicks**, contractor, have been appointed to the Charlotte, N. C., building standards board.

C. E. Proudley, engineer for the North Carolina highway department and **N. W. Conner** of the North Carolina State College department of engineering research, are members of the newly-created committee standardizing state purchases.

Col. Richard Davidson, who has been serving in Thule, Greenland, has been transferred to the Wilmington, N. C., office of the Army engineers. He is district engineer there succeeding **Col. Henry C. Rowland, Jr.**, who is retiring.

Retirements

Harold W. Fitch, Lake County, Ohio, sanitary engineer, has retired. He was chief of the water department.

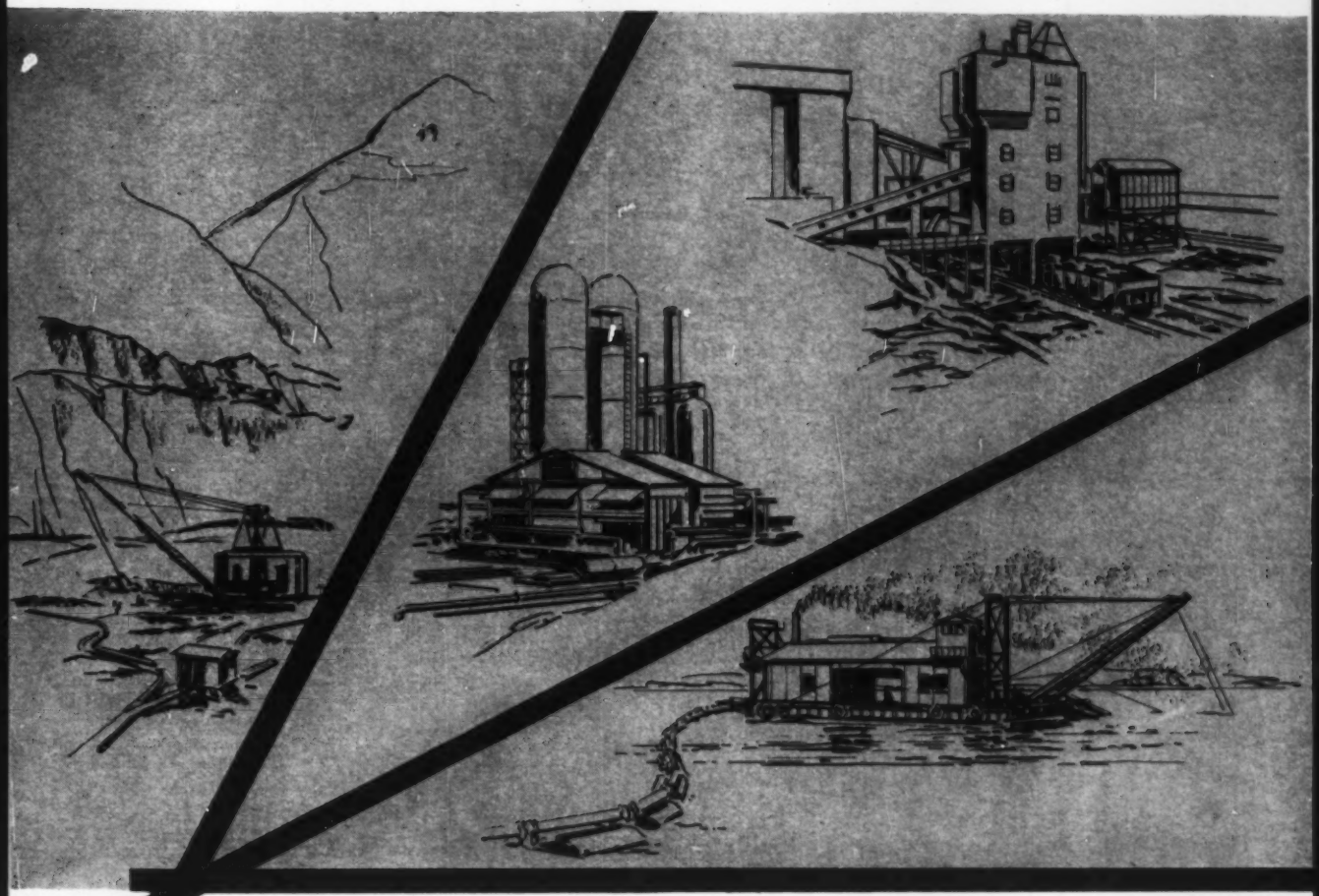
Ernest C. White retires from the Portland district of the Army engineers. At the time of his retirement he was civil engineer at Dallas Dam.

Wilbur E. Jones, has resigned as administrator of the Florida interstate highway program to go into the investment and insurance business in Miami.

James V. Turner resigns as superintendent of the East Providence, R. I., water department after 31 years.

Where DEPENDABILITY counts in centrifugal pumps...

(and where doesn't it?)



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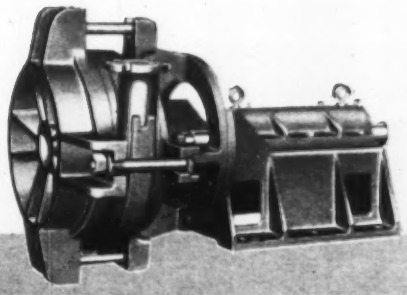

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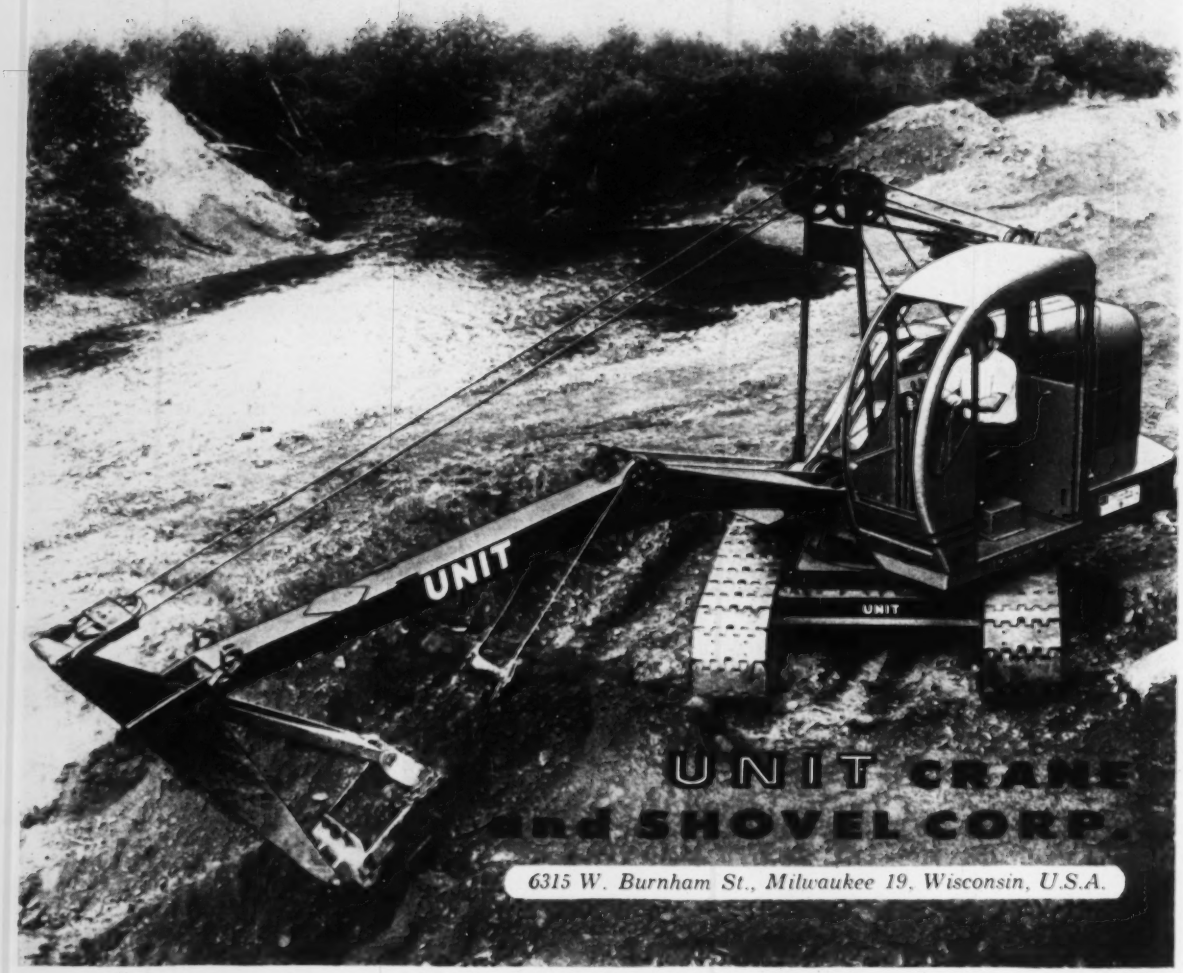

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Obituaries

Horace B. Horton Dies; Directed Construction Firm

Horace B. Horton, 73, board chairman of Chicago Bridge and Iron Co.

Mr. Horton joined the company, founded by his father, in 1907. Five years later he was elected treasurer and a director. In 1945 he was named president. In 1956, he became chairman. He also directed several subsidiary companies.

A 1906 graduate of the University of Chicago, he did graduate work in engineering at the University of Illinois.

Mr. Horton served on both the Hoover Commission and the National War Labor Board.

Wilson C. Ely, 86, New Jersey architect for 64 years and head of the architect firm, Ely & Campbell, Newark, N. J. He designed the city halls in Newark and East Orange, N. J., and was also responsible for many banks and insurance buildings in that state.

Jack T. Stewart Sr., superintendent of equipment for the Georgia Highway Department since 1952.

Charles E. Fraser, 86, retired president and founder of the engineering firms, Fraser, Brace & Co., New York City, and Fraser-Brace Engineering Co., Ltd., Montreal. His firm constructed twenty hydroelectric power plants in Canada and the U. S. During the early period of his 60-year career, he supervised construction on a section of Manhattan's east side subway. In 1908 he directed the building of railroad tunnels under the East River.

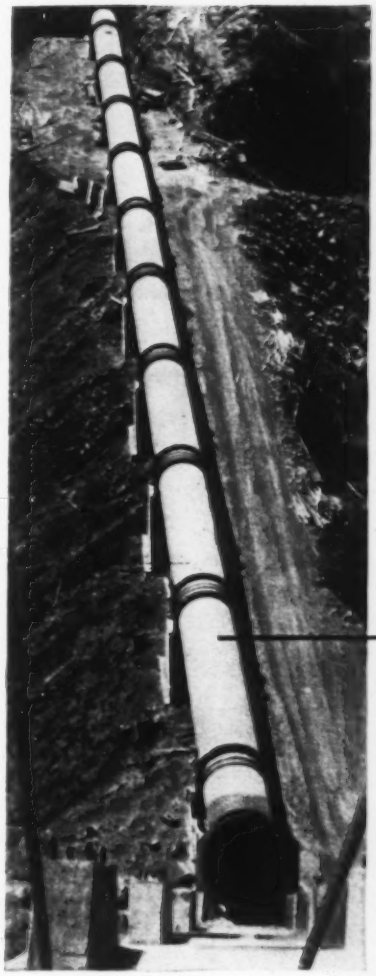
Ernest G. Wagner, 82, former Lewiston, Idaho, city engineer.

Carl G. Crawford, 89, retired vice president of the American Creosoting Corp., Louisville, and president of the Shreveport Creosoting Co., Shreveport. He had also served with the U. S. Bureau of Forestry.

G. E. Escher, 84, former president of the White Construction Co., New York City, which built the Yankee Stadium, Hayden Planetarium, New York City, and Floyd Bennett Naval Air Station, Brooklyn. He aided in the development of the inundator, a device for the accurate measurement of sand in making concrete.

Charles Hensler, 50, civil engineer for the Indiana highway department.

(*Obituaries continued p. 96*)



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Here's help for consulting engineers and everyone else directly concerned with the supply, treatment and distribution of water—help that will acquaint the general public and community leaders with the vital importance of this growing problem.

On the opposite page you see the second in a series of advertisements, this one appearing in April *Reader's Digest*. Placed by the Cast Iron Pipe Research Association, these striking advertisements point out to Mr. and Mrs. America how much we depend on a good water system and why we can no longer take it for granted.

Similar advertising will appear regularly in *U. S. News & World Report*, *Nation's Business*, *Better Homes & Gardens*, *American Home* and *Sunset* magazines to carry this public service message to millions of civic leaders and homeowners.

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These ads offer a free booklet telling about the water problem. It shows how responsible citizens can acquaint themselves with the needs of their community. It also gives a step-by-step outline of action, telling how they can help their officials extend and improve the local water system through more adequate rate structures or financing.

Let us send you a free copy of this new booklet. Write to Thos. F. Wolfe, Managing Director, Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill.

THREE REASONS WHY* CAST IRON PIPE IS *AMERICA'S GREATEST WATER CARRIER:

1. More miles of underground cast iron water mains are now in use than of all other kinds of pipe combined.

2. More miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.

3. Impartial surveys prove that today's water utility officials and consulting engineers prefer cast iron pipe for underground water distribution by an overwhelming majority.

CAST IRON PIPE

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Reader's

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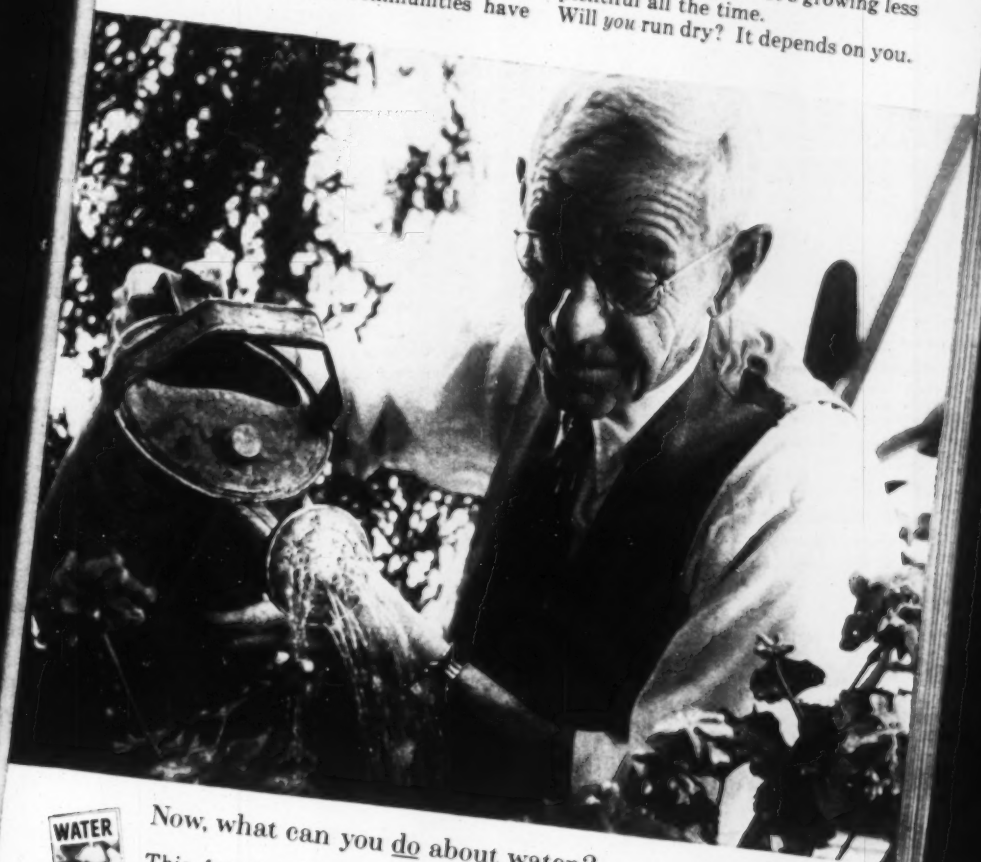
Indeed there is. In the last five years over 1000 U. S. communities have had to ration water. It's growing less plentiful all the time.
Will *you* run dry? It depends on you.



Now, what can you do about water?

This free booklet, "*WATER—make sure you'll always have plenty,*" tells how to learn if you're running short, what to do if you are. Write Cast Iron Pipe Research Assn., Prudential Plaza, Chicago 1, Ill.

Printed in your interest by the makers of America's greatest water carrier . . .

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. . . Obituaries

Thomas Davis, 83, former chief civil engineer for the Indianapolis Railways, Inc., Indianapolis. He served the firm for 41 years until his retirement.

Col. Albert B. Jones, 71, engineer who made some of the original surveys for the St. Lawrence Seaway project. During his 30 years with the Army he also directed the Virginia Key project in Florida and the deepening of the Miami shipping channel. After his retirement he opened and directed the Miami branch office for Tippetts-Abbett-McCarthy-Stratton, New York City consulting engineers.

G. Wallace Smith, 65, head of the department of engineering mechanics, North Carolina State College, Raleigh, N. C. He was co-author of the book, "The Discharge Records of North Carolina Streams" and worked for several summers with the water resources and engineering division of the North Carolina department of conservation development.

Harry E. Williams, 52, engineer aide with the Ohio highway department.

Claude Mathews, 63, partner in Burns & McDonnell Engineering Co., Kansas City, Mo. He joined the firm in 1919 after graduating from the University of Kansas with a degree in civil engineering. During World War I he was chief engineer on the design and construction of Camp Crowder, Mo.

Russell A. Thompson, 57, executive assistant to the district engineer of the Army's Chicago district. He was with the corps for 29 years and held his latest position since 1953.

John H. Obermuller, 74, retired assistant planning engineer for the California department of highways. He had been with the state for 27 years.

William M. Murphy, 78, Spokane concrete and gravel contractor.

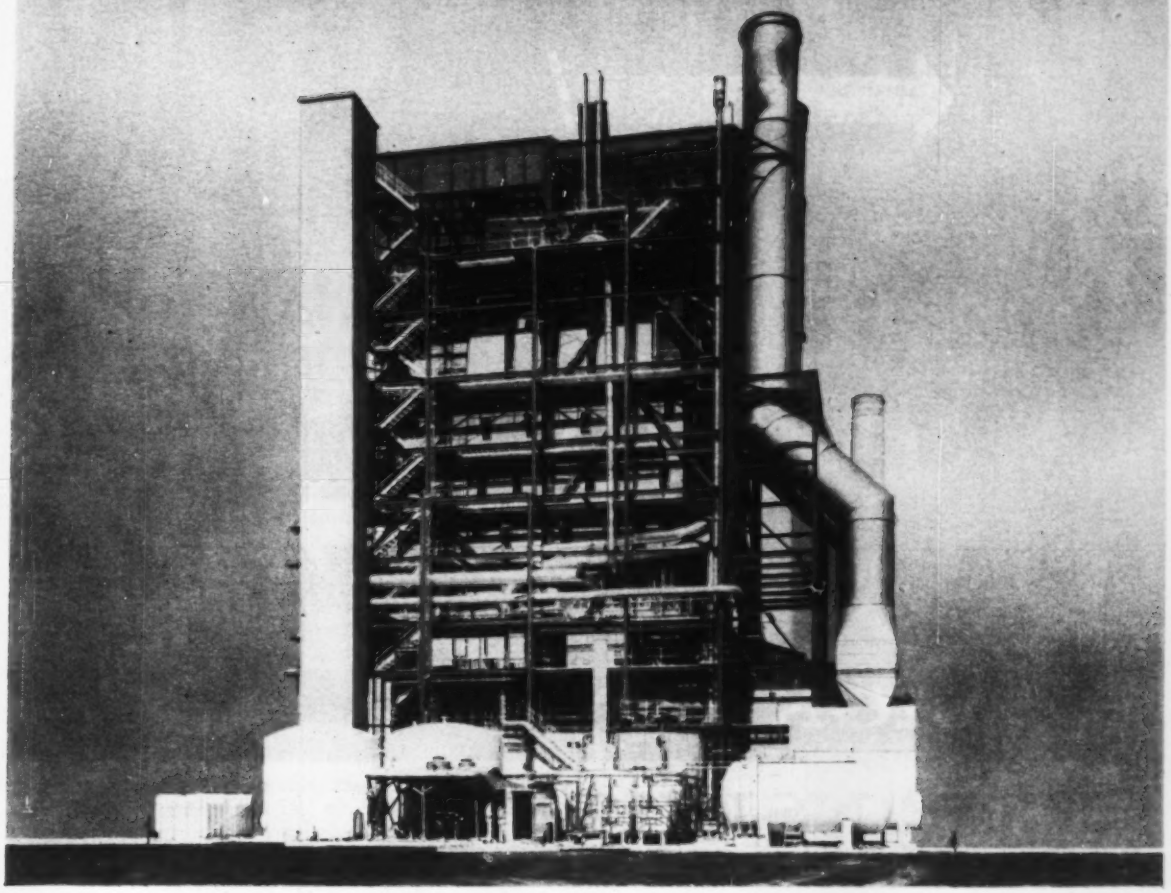
Joseph E. Spink, president of the Joseph E. Spink engineering firm, Sacramento, Calif. His firm was identified with major subdivision and water and reclamation development throughout northern California.

John R. Hill, 67, chairman of the Gifford-Hill Companies, Dallas engineering and concrete firms. Before organizing his own company in 1926 he worked for the Mississippi River Commission of the Army engineers. He also served as county engineer for Montague County, Tex.

MEMO To: CORROSIVE ENGINEERS

From: AVONDALE (AVONCRAFT DIVISION)

Subject: VERSATILITY AND PORCELAIN ENAMEL



A case in point . . . porcelain enamel was used extensively in this Louisiana Power & Light Company boiler at Sterlington, La., to thoroughly weather proof it from top to bottom. The roof is of porcelain enamel, the entire sides are generally encased with this same material, and porcelain is worked into the curvatures of the pre-heaters and stack uptakes.

Our point is . . . porcelain enamel is extremely versatile for industrial applications of all kinds. It is engineered to your purpose, prefabricated and porcelainized at our plant eliminating fitting in the field which would produce raw edges subject to rusting. Other plus factors include: color, no periodic painting or replacing, durability.

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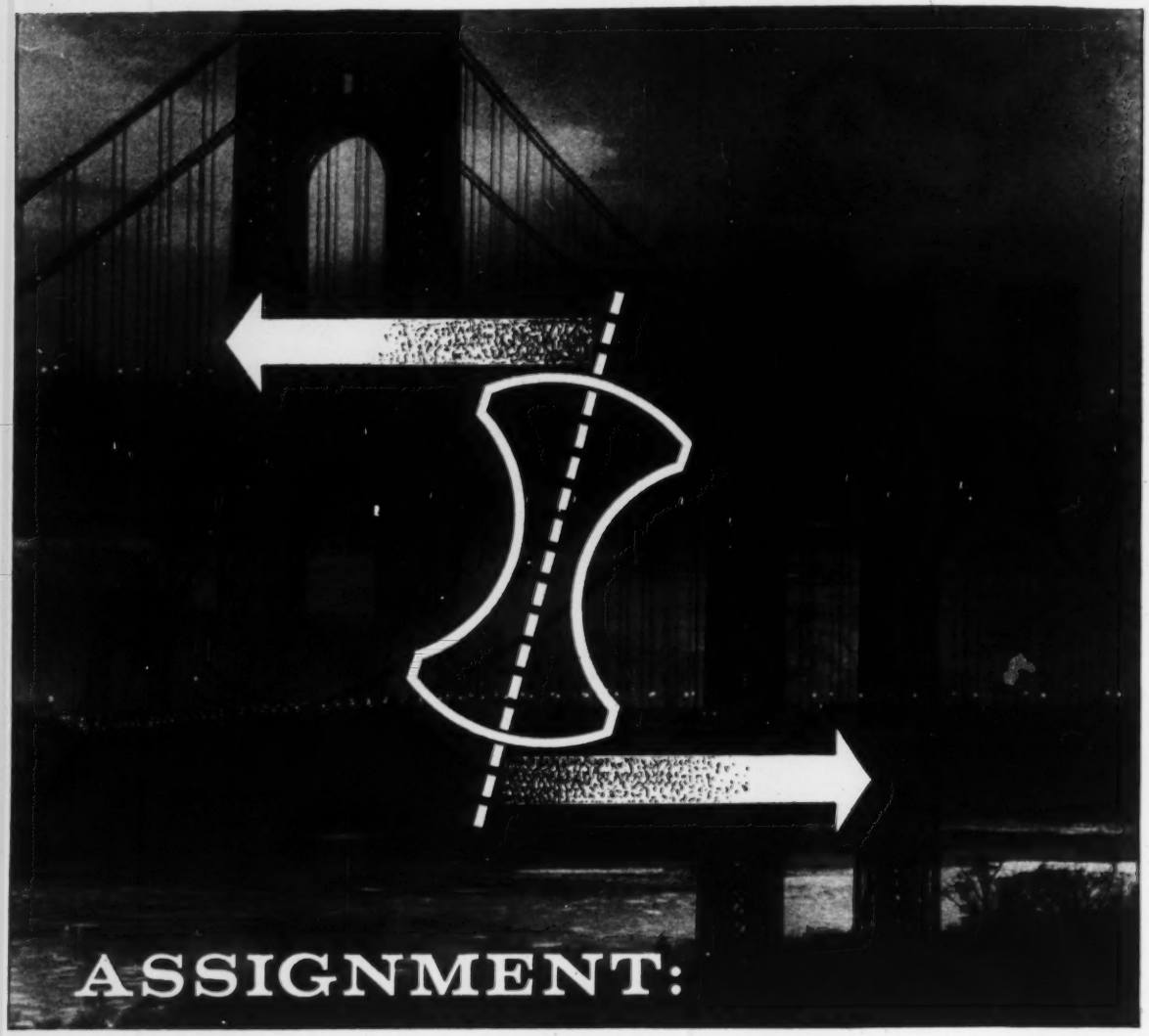

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In solving problems of expansivity, the experience of our Application Engineering staff is long and varied. And it's yours for the asking.

For example, a growing number of bridges expand and contract on *bearing plates* of Lukens stainless-clad steel. Extensive research led to the first such application. Tests run jointly with a consulting firm and a large university put Lukens clad steel plate through 2 million passes under a 100,000 pound loading—without harm. There was actually evidence that the bond between the backing steel and its stainless cladding grows stronger.

All the safety factors of corrosion-resistant stainless are present in stainless-clad—at significantly lower cost than 100% high alloy.

Since this initial research, many such bearing plate applications have been made—and their performance compared with that of other materials. Today, The Walt Whitman, Greater New Orleans, Rappahannock River, Throggs Neck, and a number of smaller highway bridges, are cradled on these safe, money-saving plates. The knowledge accumulated by Lukens' Application Engineers in this area and others is available to help guide you in your design problems.

That's why we say, *if your assignment is expansivity, let it be our assignment too.* Contact Manager, Application Engineering, C109 Services Building, Lukens Steel Company, Coatesville, Pa.

ASK FOR THE BULLETIN ON BRIDGE BEARING PLATES

Helping Industry Choose Steels That Fit The Job

LUKENS

Approximate Structural Analysis

STATICALLY INDETERMINATE STRUCTURES—By Jack R. Benjamin. 347 pages. McGraw-Hill Book Co., New York, Toronto, London. $11.

Intended as a supplement to standard texts on structural analysis and design, this book explains how the stresses in statically indeterminate structures can be approximated by sketching the structures in their deflected positions and applying the equations of static equilibrium. The author contends that "once the concepts are mastered, steps can be eliminated and rough sketches that yield most satisfactory data can be made in minutes."

In general, the procedure is to find the approximate location of inflection points, thus making continuous structures statically indeterminate. After that, determination of stresses by statics usually is relatively simple. This is a technique that experienced designers can use effectively in preliminary design or rough checking of "exact" analyses. And it is one that students will find worthwhile cultivating, if only to gain an insight to the behavior of structures.

The book deals with plastic analysis as well as with elastic theory. However, more emphasis is placed on the latter.

Two chapters of the book are particularly intriguing. One discusses the relationship of structural form to function, the other, the relationship of analysis to design.

Starting in the first of these two chapters with the concept that the most economical way to bring a single load over an opening to the foundations is by direct transfer of forces through two pin-ended columns, the author goes on to more complicated load and span conditions. This leads to a discussion of the advantages of different types of structural framing for specific applications. Beams, arches, rigid frames, trusses, catenaries, slabs and shells are analyzed.

In the second chapter, the author demonstrates that usually a design of a statically indeterminate structure based on the stresses obtained from an analysis will not yield the member sizes assumed in the analysis. If the moments, shears and thrusts do not vary significantly with changes in sizes of sections in subsequent re-analysis and redesign, the behavior of the structure is said to be normal. But if small changes in sizes produce substantial variations in stresses upon re-analysis, the behavior is termed hybrid.

The type of behavior to be expected of a particular structure, the author points out, is a function of form, proportions and loading. Most design problems involve a mixture of the two types of behavior.

With normal behavior, each member of the structure can be designed relatively independent of the others. Changes from a trial design may require a new analysis and redesign, but only minor adjustments in sizes should be necessary.

In contrast, hybrid action is associated with slow convergence; many cycles of re-analysis and redesign are necessary. Hybrid action often indicates that the structure is being asked to behave in a way foreign to its nature. The best solution, the author says, often is a complete revision of form.

Beams, Arches and Shells

ADVANCED STRUCTURAL ANALYSIS—By Sidney F. Borg and Joseph J. Gennaro. 368 pp. D. Van Nostrand Co., Inc., Princeton, New York, Toronto, London. $7.50.

The authors have incorporated in this volume several topics not included in the usual textbook on structural theory. These include principles of slab and shell analysis, determination of temperature stresses, torsion of noncircular sections, limit design and solution of structural problems by electronic computer.

As a foundation for these advanced topics, the opening chapters deal with such basics as calculation of deflections and analysis of statically indeterminate structures. Emphasis is placed on energy methods, but slope-deflection, theorem of three moments and moment distribution are well covered.

A chapter is devoted to arches. This includes presentation of the deflection theory, which takes into account higher-order effects.

The theory of torsion is developed in detail. Also discussed are the related topics of shear center and unsymmetrical bending.

Considerable space is devoted to analysis of slabs and shells. The authors discuss both "exact" and approximate methods of stress determination for shells. The "exact" methods require the solution of differential equations for given boundary conditions. The approximate methods include application of beam theory and membrane theory. However, the authors

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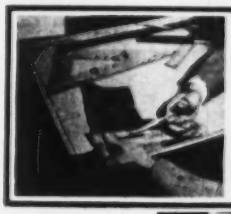

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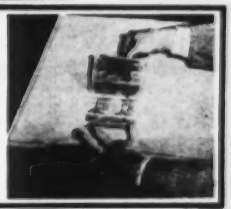

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point out that the "exact" methods may not be any more accurate than the approximate methods, because of the assumptions made in their derivation.

The book appears to be very good for survey or introduction to the broad complex subjects covered. However, some students may find the advanced topics too briefly treated for thorough understanding. The book makes up for this deficiency to some extent by offering references to other books in each field where more details can be found.

Use of Flexibility Matrices

LINEAR STRUCTURAL ANALYSIS—By P. B. Morice. 170 pages. The Ronald Press Co., New York City. $6.

Here is a generalized treatment of statically indeterminate structures based on influence coefficients. Engineers not already familiar with it will find this technique a useful analytical tool and excellent preparation for the period ahead in which high-speed electronic computers will be used to a greater extent in structural analysis.

The book is limited to equilibrium analysis of linear elastic structures; that is, continuous beams, frames and trusses. The method, utilizing flexibility coefficients, is simplified by the application of matrix algebra, which conveniently handles quantities associated in groups.

In this method, enough redundants are removed to make a structure statically determinate. The values of the redundants are then determined by solution of simultaneous equations. The matrix technique presented in this book for the handling and solution of the equations is particularly suitable for solution by electronic computer.

Just Published . . .

PERFORMANCE OF TYPE B GAS VENTS FOR GAS-FIRED APPLIANCES — Research Bulletin No. 51. Public Relations Division, Underwriters' Laboratories, Inc., 207 E. Ohio St., Chicago 11, Ill.

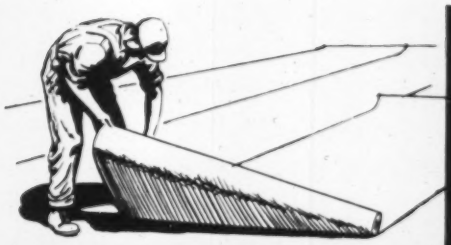
RE-EVALUATION OF PRE-ASSEMBLED WALL PANEL FRAMING SYSTEM—by Rudard A. Jones and Donald H. Percival. Research Report 58-1. University of Illinois, Urbana, Ill. $1.50.

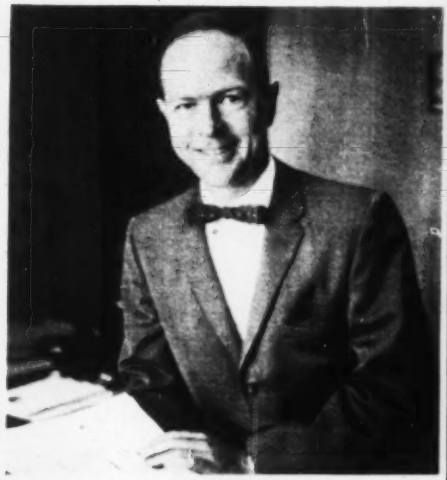
ORANGE COUNTY EXPERIENCES WITH SOIL CEMENT USE—Bulletin No. 242. American Road Builders' Assoc., World Center Building, Washington 6, D.C. 50¢.

LIME STABILIZATION CONSTRUCTION MANUAL—Bulletin No. 243. American Road Builders' Assoc., World Center Building, Washington 6, D.C. $1.00.

NOISE CONTROL IN BUILDINGS—Publication 706. 136 pages. Building Research Institute, 2101 Constitution Ave., Washington 25, D.C. $5.00.

500,000 SQ. FT. OF SISALKRAFT FOR CROWN-ZELLERBACH BUILDING PROVES ITS ECONOMY for Protecting and Curing Concrete





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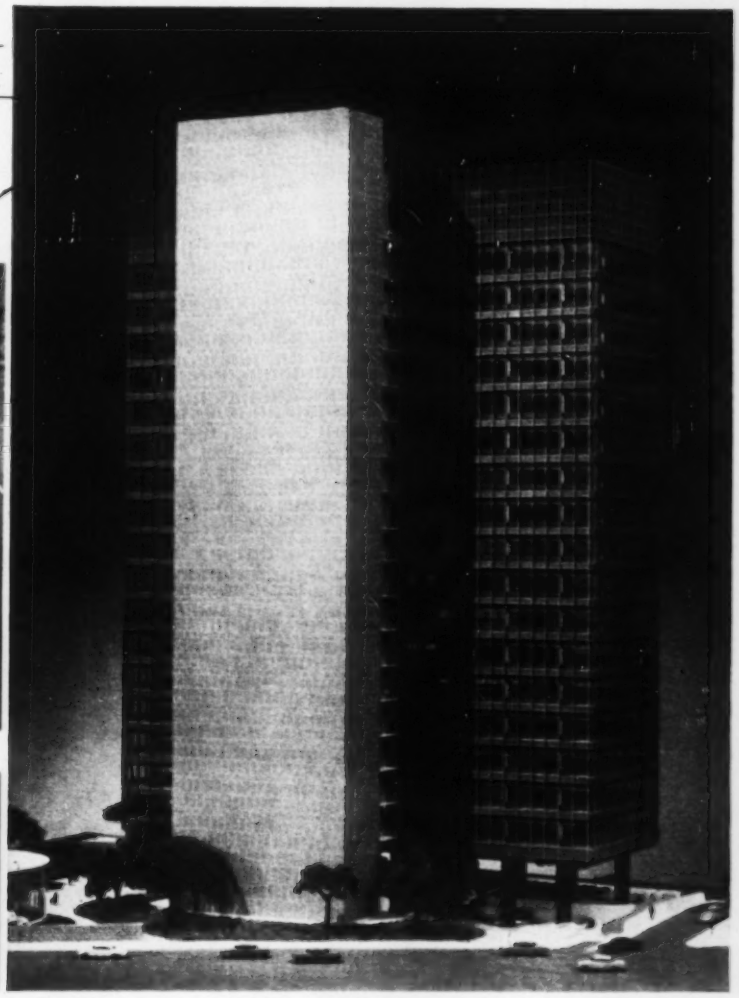

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Base and alternate bids take this . . .

West Virginia Sewerage Project

A 1.5 mgd primary type sewage treatment plant with pre-aeration for grit removal, intercepting sewers, and five pneumatic ejector-type lift stations will cost Dunbar, W. Va., $821,167. The city's Sanitary Board let the work in two contracts—the treatment plant at $298,490 and the intercepting sewers and lift stations at $522,677. Kelley, Gidley & Staub, Inc., Charleston, W. Va., is the consultant.

Schurman Construction Co., Huntington, W. Va., took the treatment plant on the concrete track alternate at the sludge drying beds. This was 1.5% under the base bid on industrial railway track and car. Bids were lump sum.

The sewers and lift stations went to R. N. Hewitt Construction Co. and Kenneth M. Dunn, Charleston, W. Va., at 2% over the engineer's estimate, on the alternate bids which priced 23,240 lin ft of substitute asbestos cement sewer pipe. The base bids priced 17,870 lin ft of vitrified clay and 5,370 lin ft of cement asbestos sewer pipe. The low bidder's prices were identical on both alternates.

Concrete must attain a compressive strength of 3,500 psi. Cast iron pipe is Class 150.

Prevailing wages include: bulldozer operator $2.95; carpenter $3.40; crane and shovel operators $3.40; common laborer $2.40.

Treatment Plant	*Base Bid	**Alternate
1C Schurman Constr. Co., Huntington, W. Va.	$303,000	$298,490C
2 Barnes & Brass, Clarksburg, W. Va.	304,142	303,142
3 Wilson Constr. Co., Huntington	369,451	368,090

*Industrial railway track & car at sludge beds.
**Concrete truck tracks at sludge beds.

Sewers & Lift Stations	*Base Bid	**Alternate
1C R. N. Hewitt Constr. Co. & Kenneth M. Dunn, Charleston	$522,677	$522,677
2 Boam Co	524,788	529,400
3 Mountain State Constr., Spring Hill, W. Va.	570,698	542,163
EE Kelley, Gidley & Staub, Inc., Charleston	512,645	512,645

*Combination vit. clay & cmt. asb. sewer pipe.
**Asb. cmt. sewer pipe.

Bids: 7-13-59 Items	Unit	Quantity	Unit Prices 1C	2
Excavation, trench 0-6'	lf	9,050	$2.10	$4.41
6-9'	lf	3,570	3.30	6.16
9-12'	lf	5,860	6.00	11.41
12-15'	lf	5,300	10.00	14.41
15-18'	lf	1,670	18.00	18.41
structural	cy	20	5.00	5.00
rock	cy	200	10.00	3.00
Spec fill, sand, grav, stn, slag	t	100	8.00	6.50
earthfill, pipe supp & cov	cy	300	3.00	5.00
Concrete pipe encasement	cy	10	70.00	50.00
Sheeting left in place	Mfb	200	50.00	50.00
Sewer pipe, in place vit, cla,y std str, 6"	lf	2,920	$2.40	$1.33
ext str, 8"	lf	4,980	4.10	2.48
10"	lf	1,420	6.00	3.23
12"	lf	1,420	7.00	4.43
15"	lf	5,040	9.00	6.23
18"	lf	2,090	13.50	8.78
cmt asb, cl 3300, 10"	lf	190	6.00	3.31
12"	lf	2,880	7.00	4.07
16"	lf	2,310	9.00	6.11
18"	lf	650	13.50	5.08
alt. asb cmt, cl 2400, 6"	lf	2,920	2.40	1.53
3300, 8"	lf	4,980	4.10	2.68
10"	lf	1,600	6.00	3.54
12"	lf	4,300	7.00	4.27
16"	lf	7,350	9.00	6.43
18"	lf	2,090	13.50	9.00
CIP, mech jt, cl 150, in pl, 4"	lf	160	4.00	2.35
6"	lf	2,040	6.00	2.50
8"	lf	290	7.00	5.89
10"	lf	30	9.00	4.83
12"	lf	220	11.00	7.82
18"	lf	50	60.00	19.04
MH, prest conc, complete, 0-6'	ea	85	400.00	475.00
depth over 6'	lf	320	45.00	30.00
Drop pipe in, 8-10-12-15" comp	ea	12	100.00	100.00
Overflow out, 10-12-15", comp	ea	12	200.00	130.00
MH, intercept tp B 0-6', comp	ea	6	600.00	400.00
Stream crossing, complete	ls	job	1,250	2,600
Connection, 6" house sewer to exist sew, 8-10-12-15"	ea	140	40.00	25.00
to catch basin	ea	30	70.00	50.00
Pavement, concrete replace	ea	8	40.00	50.00
bituminous replace	sy	1,000	8.00	8.00
Sidewalk, concrete replace	sy	2,000	7.00	5.00
Rd surf matl, cr stn or slag	sy	50	10.00	5.00
Lift stations, complete gpm 12th St 250	t	490	7.00	6.00
Aarons Br. (and compressor sta) 150	ls	job	19,670	18,900
9th St 30	ls	job	21,536	19,550
George Court 100	ls	job	6,222	5,780
Moore Ave 200	ls	job	11,928	12,360
	ls	job	18,149	18,040

Completion schedule: 300 cal days.
Liquidated damages: $50 day.

Bidding Keen for Texas Maintenance Dredging

To restore project dimensions in the Gulf Intercoastal Waterway tributary channel to Palacios, Tex., requires maintenance dredging along 29,600 ft of a 100-ft-wide by 11-ft-deep channel. Work is for the Corps of Engineers, Galveston.

The job went to Bauer Dredging Co., Port Lavaca, Tex., at $66,394, almost 31% below the engineers' estimate. The second low bid came in 30% under the estimate.

The government furnishes the dredge and attendant plant.

Minimum wages range from a high of $1.65 for skilled, through $1.15 for semi-skilled, to a low of $1.00 for common laborers.

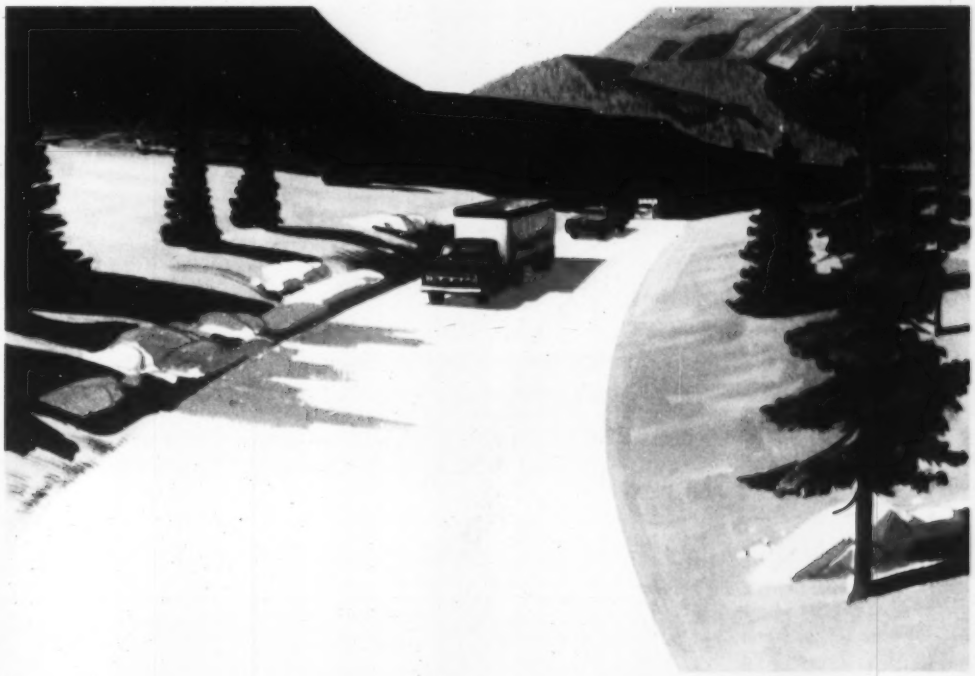
1C Bauer Dredging Co., Inc., Port Lavaca	$66,394
2 Brown & Root, Inc., Houston	67,326
6 Garrett Constr. Co., Corpus Christi	91,188
EE Corps of Engineers, Galveston	95,849

Bids: 7-28-59 Items	Unit	Quantity	Unit Prices 1C	2
Mobilize & demobilize	ls	job	$1,546	$1,000
Dredge	cy	672,000	0.0965	0.0987

Commence: 10 days from notice to proceed.
Completion schedule: 120 cal days

CHEVROLET

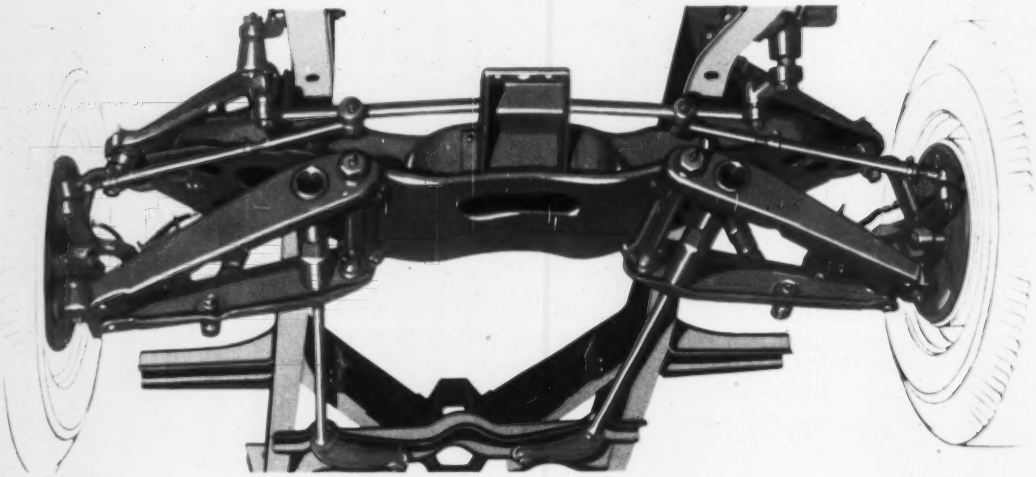
They're rolling in with the biggest news since trucks began



1960 CHEVROLET TRUCKS WITH TOTAL NEWNESS!

NEW CHEVROLET TORSIO

The smoothest thing that ever came between a road and a load!



Years in the making, this amazing suspension system, featuring torsion bar springs, is standard equipment in all classes of 1960 Chevrolet trucks—in fact, it is provided in every model with the exception of forward control and 4-wheel drive! It protects everything from the bumps and jolts that used to wear down trucks and truckers . . . provides a totally new kind of trucking that improves almost every phase of operation!

Independent front suspension with tough torsion bar springs . . . for trucks!

This totally new development improves *many* phases of trucking—does more for you than any other single feature ever introduced!

Chevrolet Torsion-Spring Ride, you'll find, eliminates the old-fashioned I-beam front axle. Gone, too, are friction-producing front leaf springs. Instead, each front wheel is suspended independently of the other. And tough-steel torsion bars extend back on either side of the chassis. They assist the low-friction spherical joints and control arms in providing precise wheel action and a *new kind* of truck springing. Independently suspended, each front wheel steps cleanly over bumps. And the friction-free torsion bars work to absorb each jolt or jar; they flex freely, even on the smallest bumps, yet have the capacity to absorb severe shocks. The result is a truck ride so wonderfully smooth that it must be experienced to be believed!

Three tailored-to-the-truck rear suspensions.

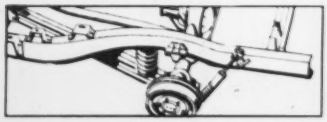
Chevrolet's new truck-built torsion-bar independent front suspension is complemented perfectly by these new rear suspension systems.

In Series 10 and 20 models, frictionless, high-capacity coil springs cushion the rear axle ideally. Rugged radius arms and a lateral stabilizer provide precise axle control.

In Series 30 and 40 models*, a new two-stage leaf spring rear suspension affords tailored springing action for all hauling conditions.

In Series 50, 60, 70 and 80 models, all-new variable-rate rear suspension provides spring resistance that adjusts automatically to assure ideal cushioning for any size load.

With these three advanced rear suspension systems, Chevrolet's new Torsion-Spring Ride adapts ideally for use in any size truck . . . brings a new, easier, more durable and profitable brand of hauling to every weight class!



New frictionless coil spring

New two-stage leaf spring

New variable-rate leaf spring

*Optional at extra cost

ION-SPRING RIDE !

It's the next best thing to paving every road in America!

Here's an advance that signals a new forward evolution in trucks, and puts *you* in the driver's seat as you've never been before!

New Chevrolet Torsion-Spring Ride, the sensational result of torsion bar suspension up front and the right kind of springs in the rear, is just as *tough* as it is smooth! It's truck-built through and through, designed specifically to weather the worst beating a bruising run can dish out. In fact, in exhaustive torture tests, Chevy's new Torsion-Spring suspension outlasted *many* sets of conventional springs!

It's here to add years to truck life . . . reduce maintenance costs to new lows . . . protect your cargoes better . . . speed up your schedules . . . save the driver from exhausting jounces and jolts!

It adds years to truck life and cuts maintenance!

Every truck component benefits from this remarkable new truck ride. The jars and jolts that used to hammer at parts and shorten working life are now cushioned by the suspension. As a result, the truck is bound to last much longer than ever before!

It protects cargoes!

Whatever you haul—from eggs to elephants—you can count on your cargoes reaching their destinations in better shape in a 1960 Chevy with Torsion-Spring Ride. Cargoes virtually "float" over road shocks on the new suspension . . . and the benefits are sure to show up on your profit reports.

It saves the driver!

These new Chevies do wonderful things for drivers, as well as owners. Gone completely is the traditional rough truck ride with its I-beam shimmy and wheel fight. Chevy's smooth-going torsion springs are designed to add years to a driver's working life, keep him fit, fresh and on the road and increase his satisfaction with his job.

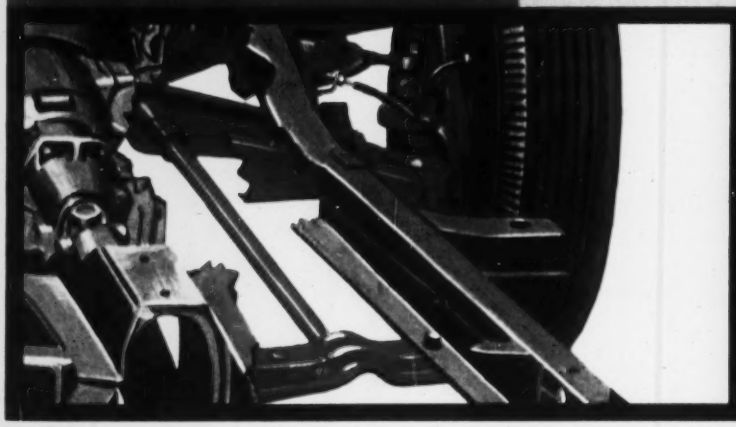
It speeds up schedules!

Bad roads have always been a bugaboo for truckers. But you'll find staying right on schedule much easier in a new Chevy Torsion-Spring hauler. The new suspension cushions road shock, gives better, safer vehicle control, enables you to maintain better speeds . . . to serve your customers more promptly and profitably!

Chevy's here with the hottest news for

NEW TORSION-SPRING RIDE

- *Years in the making, it's the most significant improvement in truck performance in decades!*
- *It's here to lengthen truck life . . . protect cargoes . . . speed up schedules . . . reduce driver fatigue . . . cut truck maintenance costs to new lows. It's ready to save you time, work and money like nothing in trucks has before!*



See how Chevrolet for '60 has engineered a revolution in trucking

...one that can make any truck route in America a far smoother road to bigger profits for you!

truckers since coffee was invented!

NEW STYLE NEW MODELS

- *All-new styling . . . new Comfort-King cabs with more room, convenience and horizon-wide visibility . . . new sturdier construction for longer truck life!*
- *Dozens of new models for '60! New bigger capacity pickups and panels, new high-style Suburban Carryalls, new tougher built tandems and chassis-cabs! New power improvements, too!*

. . . see how they've re-designed everything to bring you a new kind of tough-truck durability and saving ability!

NEW STYLING, NEW MO

. . . newly engineered for extra savings th

Totally new light-duty models

Rolling in on revolutionary torsion springs, these new Chevies are smooth as silk yet tough as nails! Their totally new performance qualities are nothing short of remarkable . . . and wait till you see what they do to your cost records!

Here's the longest line of light-duty Chevies ever. It offers virtually every type of truck known in this weight class—including some big new Series 40 chassis-cabs and stakes with G.V.W.'s up to 14,000 lbs. Every model comes handsomely decked out in a new kind of truck styling that works as well as it looks—adds to your safety, comfort and convenience. And every model offers a new lower-to-ground build (without sacrificing road clearance) which improves truck stability and makes cab entry easier.

Model C1403 Chassis-Cab

Totally new middleweights!

You can choose your truck from sixty-six models, including the brand-new economy models of Series 50 . . . haul bigger profit cargoes, thanks to G.V.W.'s up to 19,500 lbs. and stronger components!

Chevy for '60 is coming out big in the middleweight class, putting a virtual mountain of new truck muscle against your tough medium-duty jobs. Never before have components been so brawny; components such as the new frames with massive "K" and "X" braces and rigid box-section side rails that boost load-carrying ability to new highs. Or the big new standard brakes—11-inch vacuum-hydraulic power units that assure extra braking power under all conditions. And the new suspension—with torsion-bar front springing and new variable-rate rear springs—is just as strong as it is smooth!

Totally new heavyweights!

These new torsion-spring heavy-duty trucks make mammoth hauls much easier than ever before—easier on the driver, load and truck alike! The ability of the new suspension to cushion road shocks keeps everything in good shape far longer and, as a result, your truck dollars go miles farther than ever before!

Dependability, low maintenance, minimum downtime—these are the big-truck benefits that are due to take on new and better meanings when Chevy's new heavyweights take the field in force. With their totally new ride and ruggedness, and with the latest in V8 power, they're out to slash everything that gets in the way of owner's profits. That, you'll find, is a fact—whether you use top-tonnage tandems or big conventional trucks.

Model M7503 Tandem

IODELS!

through extra strength!

Model L5603 LCF Chassis-Cab

Note: Special bodies and/or vocational equipment illustrated are not the products of Chevrolet and are not intended to represent those of any specific manufacturer.

NEW COMFORT-KING CABS

Chevrolet's all-new cabs for '60 fully match the revolutionary new chassis in ability to bring new ease and dollar-saving durability to your daily hauls. Special benefits turn up everywhere. For instance, in light-duty models new Chevy cabs are lower for easier entrance and exit. And there's *more space* in all cabs—5 inches more shoulder room, 6 inches more hip room, and more leg room and head room, too! And Chevy's new double-walled cowl, new double-panel roof construction . . . plus sturdy reinforcements throughout, provide extra rigidity, ruggedness and longer life.

New Custom Cabs! For extra ease and working style, Chevy provides totally new Custom Cabs for '60, available in all cab models. They bring you: distinctive exterior chrome moldings . . . handsome chrome grille (light-duty models) . . . new Super Cushion Seat . . . sunshade, armrest, cigar lighter and control knob trim.

NEW TOUGHER BUILT TANDEMS

They're the best built tandems in Chevy history, with tough 7,000-lb. rated independent torsion-bar front suspension, Hendrickson RT320 rear suspension and two 16,000-lb.-capacity Eaton rear axles. It's a new component lineup you just can't beat for dependable service on maximum payload runs! For extra-heavy work, a brawny 9,000-lb. independent front suspension with torsion bar springs is also available, at extra cost.

and they're POWERED to improve your profit picture, too!

Chevy for '60 offers a *wide* choice of better-than-ever powerplants; in virtually every Series you can choose from famous economy 6's or V8's that lead the field for efficient short-stroke design! Three big 6's and four advanced V8's with up to 230 horsepower give you the flexibility to match the engine to your job needs for top performance and economy. And these modern engines are *loaded* with durability features to keep them going on tough jobs.

THEY'RE THE SMOOTHEST TRUCKS EVER BUILT

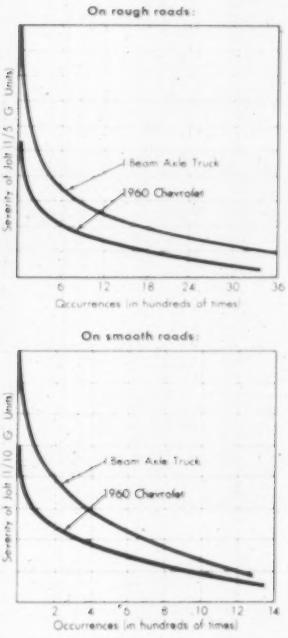
New Chevrolet Torsion-Spring Ride is something you'll appreciate fully only after you've experienced it for yourself. But these comparative test results, electronically recorded, will give you some idea of what an amazing difference new Chevrolet Torsion-Spring Ride really makes . . . some idea of why it's certain to put you on a far smoother road to bigger hauling profits than you've ever known before!

Employing the very latest in test instrumentation, recording and analytical techniques, Proving Ground engineers have made exhaustive comparison studies to find out just how good the new Chevrolet ride really is. Their ride test data were compared with comfort-discomfort limits established by leading independent ride researchers, based on the individual reactions of thousands of people throughout the world.

Heavily instrumented test driver prepares to make a ride run in a '60 Chevrolet truck. Strapped-on accelerometers register the severity of jolts felt by test driver in both vertical (bounce) and horizontal (pitch) directions. Accelerometer readings on the '60 Chevy truck are fed by cable to a companion vehicle, where they are tape recorded for later analysis by electronic computation. The result is an accurate bump-by-bump picture of each test run.

Here's what they found out: *In every respect and under every road condition, the 1960 Chevy out-rides old-style trucks by a tremendous margin!* For instance, in terms of vertical "bounce," Torsion-Spring Ride eliminates as much as 78 per cent of the uncomfortable motion found in I-beam front-axle trucks! In other respects, too—pitch, side shake and sway and their effects on both driver and cargo—Chevrolet is 'way ahead on every count!

JOLTING OF DRIVER —VERTICAL BOUNCE



Ride-test data were analyzed in terms of number of jolts registered of various sizes, or levels of severity, resulting in comparison graphs like these. The shaded area between the curves represents the overall difference in ride. Thus in this example, comparing 1960 Chevrolet and old-style I-beam-axle trucks of 19,500-lb. GVW rating, Torsion-Spring Ride reduces the jolts harsh enough to cause actual discomfort by 58 per cent on rough roads and 52 per cent on smooth roads (up to 78% in light-duty models!).

...AND THE TOUGHEST!

Chevrolet's exhaustive truck-testing program proved beyond question that *these totally new Torsion-Spring haulers are built to withstand punishment that would put an ordinary truck in the shop for repairs!*

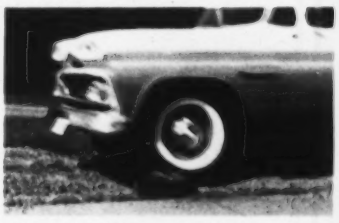
Here are two test reports that typify the thousands recorded during Chevrolet's unprecedented new truck development and testing program.

Chevrolet's tough torsion-bar independent suspension withstood the brutal Belgian Block test like nothing else ever has. One typical test forced the new Chevy trucks to withstand 8,500 miles of continuous travel on the Belgian Blocks—a road surface so jarring that trucks traditionally register failures of one kind or another after the first few hundred miles. Yet the newly engineered '60 Chevies completed all of their runs with no failures of any kind!

Rough railroad tie test proved torsion bar suspension's toughness. Carrying loads far in excess of their rated G.V.W.'s—the new Chevies hit loose railroad ties (specially placed to produce maximum stress on all components) at speeds up to 25 m.p.h. time after time. Even with panic stop braking on the ties, no failures of any kind *ever* developed in either the torsion-bar front suspension or the three new rear suspension systems!

These and countless other laboratory, Proving Ground and field tests proved the total ruggedness and *lasting* ability of the '60 Chevrolet truck product beyond question. For the ride of your working life, see your Chevrolet dealer soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

New Torsion-Springs beat brutal Belgian Blocks



"Crossties" test proves suspension's durability

(All illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice in prices, colors, materials, equipment, specifications and models, and also to discontinue models. Chevrolet Motor Division, General Motors Corporation, Detroit 2, Michigan.)

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

IRON AND STEEL PRODUCTS — PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	.....	$110.50	$130.00	$6.975	$9.75	$6.60	.....
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	.....
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	.....	.....	5.675	12.25	6.50	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.675	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.30	.....	6.375	.....	6.50	.....	.....	.....	9.75	6.875	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	69.75	9.75	6.60	.....

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS — F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$9.40		8.75	$8.75		$53.00S	$57.00S	
Baltimore	9.70		9.00T	.....		44.50	49.00	
Birmingham	9.00ty		8.99tJ	8.99ty		61.00pK	67.00pK	
Boston	9.12K		8.75t	8.75t		49.50K	54.00K	
Chicago	9.15u		7.16qu	7.16qu		52.00‡U	63.00‡U	
Cincinnati	9.55ekt		9.04‡	.....		44.50KQ	49.00mnKQ	
Cleveland	8.20ut		7.14cf	.....		46.50KL	51.00KL	
Dallas	10.45M		9.00	9.00		44.00u	48.50u	
Denver	10.16cK		9.25c	.....		63.00n	69.00n	
Detroit	9.55a 9.05M		7.15Q	11.85Q		55.00O	63.00O	
Kansas City	9.82uT		8.10N	.....		49.00	60.00	
Los Angeles	8.90dkt		7.35frt	.....		55.00S	64.00S	
Minneapolis	.....		9.20T	9.20T		44.50K	49.00K	
Montreal	7.90–8.80cCF/8.20–8.90AtF		7.00/7.50PGt	7.00/7.50PGt		65.70h	70.20h	
New Orleans	.....		8.00gkz	.....		48.50K	53.50K	
New York	9.84‡s		8.60ty	8.60y		52.00n	59.00no	
Philadelphia	9.20tu		8.25u	.....		44.50‡U	55.20‡U	
Pittsburgh	9.00y		7.35y	.....		58.50‡ru	64.50‡ra	
St. Louis	9.45stz		7.75‡trQ	7.75‡trQ		61.00wzK	82.00wzK	
San Francisco	9.90uS		8.85tS	.....		52.00S	56.00S	
Seattle	10.20aD		8.85DM	.....		67.00‡nD	73.50‡nD	
Toronto	9.20H		7.85	7.85		48.10qeJ	55.10qqJ	

Quantity extras, per cwt: under 100‡, +$10; 100–399‡, +$7; 400–999‡, +$4.00; 1000–1999‡, +$1.25; 2000–4999‡, base price; 5000–9999‡, —25¢; 10,000–19,999‡, —50¢; 20,000–29,999‡, —75¢; 30,000‡ and up, —$1.25

EXTRAS, per cwt—Quantity (applies to LCL shipments only): under 1,000‡, +$1.80; 1000–1999‡, +$1.50; 2000–4999‡, +$1.30; 5000–9999‡, +90¢; 10,000–19,999‡, +60¢; 20,000–29,999‡, +30¢; 30,000 & up, none. Size‡: #2 & up, none; #1, +10¢; #0, #7, #8, #9, +20¢; #10, #11, +50¢. Bending: heavy, +60¢; light, +$2.20. Except in New York City and surrounding metropolitan area where bending must be done on the job. Engineering details and placing from designs by others over 50 tons, +10¢; 300–499 tons, +5¢; 500–1999 tons, +2½¢; 2000–4999 tons, +1¢; 5000–9999 tons, +½¢; 10,000–19,999 tons, +¼¢; but not over $975; 5–19 tons, +$2.50; 20–74 tons, +75¢; but not over $300; under 5 tons, +$1.00 but not over $45. Min. charge $25. Design only: +60¢.

*‡ Delivered *" Aver. of Canadian & American *' add 4% sales tax *a 2000–4999‡ *b 10,000–19,999‡, fob city *c 20 tons or over *d 10,000–29,999‡ *e Intermediate struct'l *f Incl. delivery in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p 500 sq. yd. or more. *q 2.5 lb *r less 2% disc. for cash *s 2,000–4,999‡ *t less ½% disc. 10 days *u add 10¢ switch *v incl 15¢ del. *w truck lots. *x add 2% sales tax *y add 15¢ del. *z add 10¢ del. *A American made. *C Canadian made. *D ½% for cash. *E 30,000‡ or over. *F Federal tax exempt for bidgs. *G add 10¢ del. *H 8.85 without tariff charges. *I 3 lb $80.00. *J 4 lb $47.50. *K less 2% disc. 10 days *L F.o.b. Youngstown plant *M 5,000–9,999‡ *N 2,000–19,999‡ *O 100 sy lots *Q 5 tons to CL *R: revised *S less 2% disc. 10th *T less ½% disc, 10th of mo. *U less 2% disc 10 days

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXα	ASBESTOS CEMENT PIPE Z per lin. ft. 6" Press CL 150	ASBESTOS CEMENT PIPE Z per lin. ft. 12" Sew CL 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 8 in.	12 in.	ASTMC 200-55T 24 in.	36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in.	8 in.	CONCRETE SEWER PIPE§ Per ft., delivered ASTMC 14-55 12 in.	24 in.
Atlanta	130.5	$1.61/1.69	$2.36/2.48	$0.55r	$1.05r	$4.05r	$12.50r	$209.00rr	$334.00r	$0.92mKr	$3.68mKr
Baltimore	140.1	1.61/1.69	2.19/2.30	.665	1.20	5.05	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.61/1.69	2.26/2.37	.50r	.95r	4.14rw	13.50rw	295.00rz	436.00rz	1.25rS	2.78rS
Boston	143.1	1.63/1.71	2.19/2.30	.784qrtL	1.512qrtL	6.255qrtM		215.40r	330.60r	1.56S	3.47S
Chicago	140.9	1.61/1.69	2.19/2.30	.93rm	1.78rm	7.52rm	21.16rm	220.00Br	330.00Br	1.30	4.00
Cincinnati	135.5	1.63/1.71	2.19/2.30	.616rt	1.188rt	4.725rt	12.40r	270.00r	400.00r	.85rAB	3.25rAB
Cleveland	141.7	1.63/1.71	2.19/2.30	.69BCN	1.32tBC	5.13tBC	13.33tBC	155.40mBC	240.60mBC	1.35	3.60P
Dallas	137.8	1.63/1.71	2.26/2.37	.550‡B	.96‡B	4.40‡B	9.75‡bB			1.25BD	2.85BD
Denver	148.2	1.71/1.80	2.36/2.48	.52mr	.96mr	3.93mr		460.00mr	580.00mr	1.05m	3.50m
Detroit	142.1	1.61/1.71	2.19/2.30	.90mk	1.70mk	6.80mk	18.50mk	182.00mk	280.50mk	1.10k	4.05k
Kansas City	138.5	1.61/1.71	2.26/2.37	.61r	1.105r	6.104br	16.50r	303.00r	581.00r	1.60r	3.55r
Los Angeles	148.6	1.70/1.79	2.19/2.30	.82bl	1.78bS	7.19bS	16.90bST	410.00tS	590.00tS	1.24rE	3.66rE
Minneapolis	149.9	1.67/1.75	2.26/2.37	.96oB	1.67oB	7.30oB				2.19DFH	6.31DFH
Montreal				1.13u	2.00u	7.00u	13.50u	288.00	545.00	1.17D	3.11pD
New Orleans	133.3	1.61/1.69	2.26/2.37	.566r	1.12r	5.65r		240.50rr	490.00	.95rl	3.75rl
New York	138.5	1.63/1.71	2.19/2.30	.77	1.49R	7.59	21.28	209.40	321.60	1.50‡R	3.60‡R
Philadelphia	137.8	1.61/1.69	2.19/2.30	.72‡	1.40‡	9.02‡r	24.68‡r	220.00‡	330.00‡	1.50‡A	4.00‡A
Pittsburgh	142.9	1.63/1.71	2.19/2.30	.94KR	2.01KR	8.79K	24.15K	190.00	295.00	1.66Db	3.93DB
St. Louis	136.9	1.61/1.69	2.26/2.37	.62r	1.15r	4.92r	12.68rS	200.00r	300.00r	1.50t	3.65
San Francisco	148.6	1.70/1.79	2.19/2.30	.861d	1.861d	7.531d	18.001d	360.00‡l	620.00‡l	1.05‡Q	3.30‡Q
Seattle	149.0	1.71/1.80	2.19/2.30	.858k	1.838h	7.61k		205.00ck		1.95ky	4.55ky
Toronto				.80F	1.50F	6.00F		157.00F	280.00F	1.05F	4.62F

*† Extra quality. *§ Extra strength. *‡ delivered. *' add 4% sales tax *a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE. (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. *b Extra strength. *c 4-in., $130. *d SS361-A. *f 21 in. *g culvert pipe; reinf., ASTM C 75-56. *h reinf., ASTM C 75-54. *i reinf., ASTM C 76-55. *j centrispun. *k less 2% disc. for cash. *l fob plant. *m truck del. *n LCL del., fob truck. *p less 5% disc. 10th. *q freight allowed to destination in city. *u 35,000‡ minimum. *r less 2% disc. 10 days. *s 1 ft lengths. *u CSA A 60. *v standard strength. *w SS; add 20% for d.s. *x fob city. *y Reinforced. *z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. *A single strength. *B truckload. *C less 2% disc. 15th. *D ASTM 76-57. *E less 1% disc. 10 days. *F less 2% disc. 30 days. *G LCL. *H CL. *I fob origin, freight allowed. *J reinf. B14-15. *K Less 2% disc. 15 days. *L ASTM 13-57. *M ASTM 200-57. *N 2 ft lengths. Trucklots. *O add 2% Sales Tax. *P 18 in. *Q less 1% disc. 10th. *R Extra Strength *S ASTMC 72, 12" 1.55, 24" 4.00. *T extra strength.

"WROUGHT STEEL PIPE"

(Full standard weight)

Discount from list; see footnotes

Mill	2½ to 6 in. Butt Weld‡ Black %	2½ to 6 in. Lap Weld‡ Galv. %	2½ & 3 in. Butt Weld‡ Black %	2½ & 3 in. Butt Weld‡ Galv. %	b Continuous c Seamless
Lorain, Ohio	13.75	+3.00/+18.75/	13.75	+2.50	
Aliquippa, Pa	13.75	+3.25/+11.00a	13.75	+2.50	
Sparrows Pt., Md.	17.25	+1.00	17.25	+1.00	
Benwood, W. Va.	13.75	+3.25dd	13.75	+3.50	
Youngstown, O.	12.75	+3.25	12.75	+3.50	
Indiana Harbor, Ind.	11.75	+1.25dd	11.75	+1.50	
Sharon, Pa	13.75	+3.25	13.75	+2.50	
Wheatland, Pa	13.75	+3.25	13.75	+2.50	
Etna, Pa	13.75	+3.50dd	13.75	+3.50	
Fontana, Calif.	0.75	+7.50b	0.75	+15.50b	
		+9		+26.50ab	

* Threaded and coupled. a 3½ to 4 in. weld. d 6 to 12 in. f 8 in.

WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): Butt Weld ⅛ in., 8½¢; ¼ in., 8¢; ⅜ in., 8¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 78½¢. Lap Weld 3½ in., 82¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. continuous weld same as lap weld prices. Add freight, 3% transport tax for destination price.

† Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 68.54, galv., + 95.77; 1¼ in. black, + 68.54, galv., + 95.23, 1½ in. black, + 61.79 galv., + 91.22; Lap Weld —2½ in. to 3 in. black + 67.95 galv. + 98.77; 4½ in. to 6 in. black + 64.74 galv. + 90.88 Add freight rates plus 3% transportation tax to get destination price.

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Sept. 24; Next, Oct. 22.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 1; Next, Oct. 29.
- Wage Rates, Building Board, Lath, Insulation: Last, Oct. 1; Next, Oct. 29.
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Oct. 8; Next, Nov. 5.

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Conn., Bristol**—DRIVEWAY EXTENSION—BA 10/19—General Services Admin., 620 P. O. Bldg., Boston, Mass., driveway extension, Bristol Post Office.

† **New Hampshire**—BA 10/22—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., clearing reservoir area, Bellamy Dam, Madbury, ENG-19-016-60-19. $150,000-$200,000. Whitman & Howard, Inc., 89 Broad St., Boston, Mass., engr. CD 9/23.

† **R. I., Newport**—CONCRETE SHOULDERS, etc.—BA 10/22—Dist. P. Wks. Office, 1st Naval Dist., 495 Summer St., Boston, Mass., concrete shoulders; replacement deteriorated areas of concrete pavement and placing concrete overlay spalled areas; scarifying and treating with asphalt sand cover certain deteriorated areas of asphalt macadam; extending and replacing exist. concrete culverts; sealing cracks and joints, Naval Station, IFB 28632/59-B. Plans deposit $25. CD 8/27/56.

BUILDINGS—BA

▲ **Mass., Southbridge**—SCHOOLS—BA 10/20—Town, Supt. Schools, 82 Marcy St., high school and Cole Trade School addns., south of Woodycrest Ave., Dresser St. and Cole Ave. $1,200,000. Plans deposit $200. Theodore J. Brodeur Assoc., 286 Lincoln St., Worcester, archts. CD 8/11/58.

▲ **Mass., Duxbury**—SCHOOL—BA 10/29—Town, Supt. Schools, Elementary School, Alden St., Junior-Senior High Schools; St. George St., Wright Estate. $1,300,000. Plans deposit $100. Karslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, archt. CD 9/20/57.

▲ **Mass., Medford**—ENGINEERING—BA 10/29—Tufts University, engineering bldg., Campus. $1,500,000. Charles T. Main, Inc., 80 Federal St., Boston, engr. CD 5/29/57.

Vt., Winooski—STUDENT UNION, etc.—BA 10/29—St. Michaels College, 56 College Parkway, student union and dining hall. $400,000. Freeman, French & Freeman, 158 Bank St., Burlington, archts. CD 1/29.

BUILDINGS—SLC

N. H., Somersworth—PLANT—General Electric Co. R. E. & Operations, 1 River St., Schenectady, N. Y., soon lets contract plant addn. $150,000. Anderson, Nichols & Co., 10 Eastman St., Concord, archts.-consult. engrs. CD 7/22.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., Augusta.

Me.—The Bridge Constr. Corp., 283 Water St., Augusta, Me., CA $362,729 (9 bidders), b. conc. road and bridge 1.581 mi. Town of Stockton Springs. FAP No. F-042-1(7). Waldo Co. CD 9/22.

Me.—Thomas DiCenzo, Calais, Me., CA $192,285, b. conc. road and bridge 2.887 mi. Mattawamkeag, FASP No. S-0315(7), Penobscot Co. Bids Sept. 30. CD 9/21.

† **Cardinal Bldg. & Constructors, Inc.**, 64 Clinton St., Plattsburgh, N. Y., LB $112,000, est. $115,457, GAM-77 missile run-up shop, Loring Air Force Base, ENG-19-016-60-23, LIMESTONE, ME. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Sept. 30. CD 9/22.

† **Guy R. Allen**, 185 Water St., Gardiner, Me., LB $216,653, est. $200,000, off-site utilities, Air Force Station, IFB 17-612-60, TOPSHAM, ME. Base Procurement Office, Air Force Base, Brunswick, Me. Kelley & Gruzen, 80 5th Ave., New York, N. Y., archts. Bids Sept. 24. CD 9/24.

Chelsea Engineering & Constr. Co., 85 Garfield Ave., Chelsea, Mass., LB $111,065, est. $116,536, Contr. 2028, stream imprvs. Wigwam Brook, Dedham, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Sept. 29. CD 9/22.

Donoghue & Barteis, Inc., 26 Garden St., Arlington, Mass., LB $289,310, est. $300,000, Contr. 250, furnishing, laying water pipes, Arlington, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Water Div., 20 Somerset St., Boston, Mass. Bids Sept. 30. CD 9/16.

A. & S. Constr. Co., 480 Metropolitan Ave., Hyde Park, Mass., LB 1112,790, est. $125,000, Contr. 59-1, sanitary sewers, HINGHAM, MASS. Town Bd. Sewers Comrs., Town Office Bldg., 14 Main St., Hingham, Mass. Bids Sept. 30. CD 9/21.

R. A. Buccella & Sons, Inc., 357 Page St., Avon, Mass., LB Alt. A $136,058, LB Alt. B $129,558, LB Alt. C $132,618, Contr. 3A, sanitary sewers, WEYMOUTH, MASS. Town Bd. P. Wks., 402 Essex St., Weymouth, Mass. Bids Oct. 1. CD 9/16.

Ardsley Constr. Co., 285 Madison Ave., New York, N. Y., LB $129,290, Div. No. 1, imprvs. main sewage pumping station, Fields Point, Ernest St. and Allens Ave., PROVIDENCE, R. I. City, City Hall, Providence, R. I. Bids Sept. 29. CD 9/11.

Coken Co., 449 Cranston St., Cranston, R. I., LB $123,500, Div. 3 (Providence, R. I.).

Barry Maring, Jr., Inc., 536 Lindley St., Bridgeport, Conn., LB $540,250 (3 bidders), rebuild East Side Incinerator, Asylum St., BRIDGEPORT, CONN. City, City Hall, Bridgeport, Conn. Bids Sept. 29. CD 9/22.

City, City Hall, Stamford, Conn., rejected bids Sept. 15, slab facilities bdg., East Beach, Cove Isand, STAMFORD, CONN. City, City Hall, Stamford, Conn. CD 9/25, under LB.

BUILDINGS—LB & CA

Fred I. Merrill, Inc., 187 Sawyer St., South Portland, Me., CA Approx $600,000, MOTEL and RESTAURANT, Brighton Ave.; PORTLAND, ME. Herbert K. Smaha, 118 Bedford St., Portland, Me. Bids Sept. 25. CD 9/22.

Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass., CA Approx. $400,000, Northwest Industrial MANUFACTURING PLANT, BURLINGTON, MASS. Waveco Corp., 233 High St., Waltham, Mass. Symmes, Maini & Hryniewicz, 604 Putnam Ave., Cambridge, Mass., archts.-engrs. CD 7/1.

† **Dist. P. Wks. Officer, First Naval Dist.**, 495 Summer St., Boston 10, Mass., rejected bids Apr. 24, 19 units Capehart Housing, Navy Field, NBy-22979, Spec. No. 22979/58, FHA Proj. 023-81021, NANTUCKET, MASS. $350,000-$500,000. CD 4/17.

Westcott Constr. Co., 52 N. Washington St., North Attleboro, Mass., LB $403,500, est. $400,000, ELEMENTARY SCHOOL, Plain St., NORTON, MASS. Town, Supt. Schools, Norton, Mass. Robert M. Rumpf, 118 Newbury St., Boston, Mass., structural engr. Bids Sept. 30. CD 9/2.

Daniel O'Connell's Sons, Inc., 480 Hampden St., Holyoke, Mass., CA $966,465, HOSPITAL addn., alterations, Chestnut St., SPRINGFIELD, MASS. Wesson Maternity Hospital, 735 Chestnut St., Springfield, Mass. Bids Aug. 28. CD 9/2, under LB.

Thomas C. Vincent, Inc., 327 Northrop Ave., Mamaroneck, N. Y., LB $127,500, Y58-3 POWER PLANT and utility distr., Lyman School for Boys, WESTBORO, MASS. Commonwealth of Mass., Youth Service Bd., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Oct. 2. CD 9/10.

▲ **V. A. Cusanello Contracting Engineering, Inc.**, 27 Edward St., Worcester, Mass., LB $1,084,197, JUNIOR-SENIOR HIGH SCHOOL, Grove St., WINCHENDON, MASS. Town, Supt. Schools, Winchendon, Mass. Bids Sept. 24. CD 8/28.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	Mississippi to Rockies
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ **Dimeo Constr. Co.**, 511 Westminster St., Providence, R. I., CA $1,750,000, MANUFACTURING PLANT, Lawton Valley site, PORTSMOUTH, R. I. Raytheon Mfg. Co., Foundry Ave., Waltham, Mass. Bids Sept. 22. CD 9/14.

Westcott Constr. Corp., Savings Bank Bldg., North Attleboro, Mass., CA Est. $250,000, SALES and SERVICE PLANT, West River Industrial Park, PROVIDENCE, R. I. Mack Trucks, Inc., 630 Broadway, Providence, R. I. Phillip Franklin Eddy, 32 Custom House St., Providence, R. I. archt.

Litchfield County Homes, Inc., 157 Migeon Ave., Torrington, Conn., Owner Builds, $622,000, 68 HOUSES, "Fieldcrest Estates", Lamphere Drive, GROTON, CONN.

▲ **Fusco-Amatruda Co.**, 59 Amity Road, New Haven, Conn., CA $1,100,000, 8 STORES, Hamden Mart, Dixwell Ave., HAMDEN, CONN. Hamden Mart, Inc., Dixwell Ave., Hamden, Conn. Awarded Oct. 2.

Standard Builders, Inc., 55 Airport Rd., Hartford, Conn., CA $405,000, HEADQUARTERS, Robert Darling Memorial, Hartford Seminary Campus, HARTFORD, CONN. Connecticut Council of Churches, 210 Pearl St., Hartford, Conn. Awarded Oct. 2. CD 12/1.

▲ **Joseph F. Carabetta & Bros., Inc.**, 47 Hill St., Meriden, Conn., Owner Builds, $2,465,000, 145 HOUSES, "Birchwood Estates," Foster Lake, MERIDEN, CONN. CD 7/2.

Garry Building Corp., Crossroads Plaza, West Hartford, Conn., Owner Builds, $599,600, 40 HOUSES, Forrest Park, Woodruff Rd. (additional section), MILFORD, CONN.

▲ **Frank Mercede & Sons**, 72 Little Hills Drive, Stamford, Conn., CA $1,273,000 (8 bidders), CHURCH, FELLOWSHIP HALL and SUNDAY SCHOOL, Oenoke Ridge, NEW CANAAN, CONN. St. Marks Episcopal Church, 117 Oenoke Ridge, New Canaan, Conn. Bids Sept. 9, awarded Oct. 2. CD 9/29, under LB.

▲ **W. H. Charbonnier**, 54 Windward Way, Millstone Point, Waterford, Conn., Owner Builds, $1,300,000, 130 HOUSES, "Laurel Hill Acres," Flanders Rd., NIANTIC, CONN. CD 9/17/58.

Havemeyer Ridge, Hassake Rd., Old Greenwich, Conn., Owner Builds, $560,000, 56 HOUSES, "Havemeyer Ridge," Hassake Rd., additional section, OLD GREENWICH, CONN. CD 6/25.

Standard Builders, 55 Airport Rd., Hartford, Conn., CA $595,451, CHURCH, PARISH HALL and RECTORY, Elm St., ROCKY HILL, CONN. St. James Parish, 12 Chapin Ave., Rocky Hill, Conn. Bids Sept. 17. CD 9/9.

Thorne & Peck, 83 W. Middle Tpk., Manchester, Conn., CA $597,700, 43 HOUSES, "Brookhaven Homes," Skinner Rd., VERNON, CONN. Brookhaven Homes, 83 W. Middle Tpk., Manchester, Conn. Awarded Oct. 2. CD 4/24.

Matthew J. Reiser, Inc., 450 New Britain Ave., Hartford, Conn., CA $125,000, 2 story, 50 x 100 ft. and 100 x 130 ft. masonry, steel INDUSTRIAL BLDG., Wells Rd., WETHERSFIELD, CONN. Jones Realty Co., Inc., 541 Windsor St., Hartford, Conn. Awarded Oct. 2.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Md., Hyattsville—BA 10/19—Washington Suburban Sanitary Comn., Hamilton St., Contr. 2477, sewage pumping station, 660 G.P.M. capacity, Lackawanna St. and 24th Ave., Holly Hill Manor. Plans deposit $5. CD 9/23/55.

Pa., Phila.—BA 10/20—Dpt. Procurement, City Hall Annex, Bid 2405, clearing and cement-mortar lining and replacing line valves in C.I. water mains, Intermediate sizes (20 in., 16 in., 12 in.) in various sections of city, Bid 2406, water main Church Lane, from Belfield Ave. to Bayar St., Bid 2407, water mains (Assessable) Nottingham Lane, etc., for Water Dpt. CD 11/8.

New York—BA 10/21—Triborough Bridge & Tunnel Auth., Administrative Bldg., Randall's Island, New York, Zone 35, Throgs Neck Bridge Contr. No. TN-12E-T, Bronx Plaza toll collection equip. Plans deposit $20. CD 1/20/55.

N. Y., Eastchester—BA 10/21—Town Bd., 40 Mill Rd., Contr. 1, bldg. constr., Contr. 2, furnaces and equip., Contr. 3, heating sys., Contr. 4, plumbing sys., Contr. 5, electrical sys., Contr. 6, chimney for new refuse incinerator. Plans deposit $25. William Raisch, 61 Hilton Ave., Garden City, consult. engr. CD 11/24/43.

† **Md., Andrews Air Force Base**—HANGAR, etc.—BA 11/3—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., hangar, maintenance, organization (SAM-2), ENG-49-080-60-7(7). Plans deposit $25. Green Assocs. Inc., 220 E. Pleasant, Baltimore, consult. engr. CD 9/30.

BUILDINGS—BA

▲ **N. J., Union**—WAREHOUSE—BA 10/27—Baxter Warehouse Co., c/o Frank L. Grad & Son, archts., 11 Commerce St., Newark, 280 x 324 ft. warehouse, Rahway Ave. $1,000,000. CD 9/21.

Pa., Millersburg—SCHOOL—BA 10/28—State P. School Bldg. Auth., 101 S. 25th St., Harrisburg, high school addn. for Millersburg-Upper Paxton Union School Dist., Proj. 565-664. $800,000. Plans deposit $50. Lawrie & Green, 321 N. Front St., Harrisburg, archts. CD 7/9/58.

BUILDINGS—SLC

Pa., Willow Grove—LAUNDRY, etc.—Hankin, Hankin & Shankin, Willow Grove, soon lets contract laundry and cleaning plant. $150,000. Buchart Assocs., 611 W. Market St., York, archts.

HEAVY CONSTRUCTION—LB & CA

Kendall Roadways, Inc., 1375 Williams St., Buffalo, N. Y., LB $769,174, relocation utilities and electrical work on Whirlpool St., Niagara Falls, Niagara Co., Spec. No. PA-N-23030, Niagara Contr. No. N-24, NEW YORK, Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Oct. 1. CD 9/3.

Walter P. Blimm Co., 270 State St., Lockport, N. Y., CA $124,781 (1 bidder), resurf. Washburg St. from Union to Willow Sts., LOCKPORT, N. Y. City, City Hall, Lockport, N. Y. CD 8/1/51.

J. C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y., LB $347,289 (4 bidders), Contr. 1130-B, paving, curbs, sidewalks, drainage 8,780 ft. plus or minus Beltagh Ave. from Bellmore Ave. to Mill Rd. and Mill Rd. from Beltagh Ave. to Sunrise Hy., Town of Hempstead, MINEOLA, N. Y. Comr. P. Wks., Nassau County, Old County Court House, Mineola, N. Y. Bids Sept. 30. CD 9/25;
Radory Constr. Corp., 94 Cherry Valley Rd., West Hempstead, N. Y., LB $253,325 (5 bidders), Contr. 1131-B, resurf., curbs and drainage 6,700 ft. plus or minus, Stewart Ave. from Motor Parkway easterly to Carman Ave., East Meadow, Town of Hempstead, (Mineola, N. Y.).

Lizza & Sons, Inc., 21 Orchard St., Oyster Bay, N. Y., LB $297,497 (8 bidders), Contr. B-954-C, landscaping Barnum Ave. (Merrick Ave.) Smith St. drain on Barnum Ave. from Long Island R.R. 4,400 ft. plus or minus northerly to East Garfield St. and on Smith St. from Barnum Ave. 1,800 ft. plus or minus easterly to Brook, Merrick, Town of Hempstead, MINEOLA, N. Y. County Executive, Nassau Co., Old County Courthouse, Mineola, N. Y. Bids Sept. 29. CD 9/25.

▲ **United States Steel Corp.,** 71 Broadway, New York, N. Y., CA $1,666,200, est. $3,100,000, Contr. 2, lift span Broadway Bridge over Harlem Ship Canal, Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York 7, N. Y. Bids Oct. 1. CD 9/8.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Glasgow, Inc., Glenside, N. J., CA $1,018,821, intersection imprvs. turning ramps and island closings 6.043 mi., Rte. 130 (Sects. 8A and 9A) from Coopertown Rd. to Cinnaminson Ave. Burlington Co. Bids Aug. 26, awarded Oct. 1. CD 8/28, under LB.

Ace-Stone, Inc., 710 Bloomfield Ave., Glen Ridge, N. J., LB $282,590, Contr. No. 44 sewer mains and manholes HACKENSACK, N. J. Bergen Co. Sewer Auth., 66 Zabriskie St., Hackensack, N. J. Bids Aug. 5. (Correction—Low Bidder). CD 8/10, under LB.

Somers Constr. Co., Bala Cynwyd, Pa., CA $250,960, subway station (high speed line) alterations, 15th and Market Sts., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Costello & Orefice, 843 N. 19th St., Phila., Pa., archt. Keast & Hood, 1201 Chestnut St., Phila., Pa., engrs. CD 10/23/58.

▲ **American Bridge Div. U.S.S. Corp.,** 205 Frick Bldg., Pittsburgh 30, Pa., CA $3,141,471, superstructure and deck paving 62nd St. Bridge No. 8, Allegheny River, Contr. No. 3, PITTSBURGH, PA. Bd. Comrs. Allegheny Co., County Office, Pittsburgh, Pa. Bids Sept. 8. CD 8/27.

Schurman Constr. Co., 75 W. 3rd St., Huntingdon, W. Va., CA $874,215, sewage treatment plant, ST. MARYS, PA. St. Marys, Pa. Borough, St. Marys, Pa. Bids Aug. 31. CD 9/22, under LB.

Lopez Constr. Co., 4912 49 Ave., Edmonston, Md., LB $958,134 (9 bidders), Slash run relief sewers "L" St. N. W. between 22 St. and Connecticut Ave., WASH., D. C. D. C. Govt., Dpt. Sanitary Engineering, 499 Pa. Ave. N. W., Wash., D. C. Bids Sept. 29. CD 9/21.

BUILDINGS—LB & CA

John W. Cowper Co., 1945 Sheridan Rd., Tonawanda, N. Y., CA Est. $600,000, 40,000 sq. ft. PLANT addn., Broadway and Kennedy Rds., CHEEKTOWAGA, N. Y. American Machine & Foundry Co., 261 Madison Ave., New York 16, N. Y.

Carl G. Ek & Son Constr. Co., Inc., 1321½ North First St., Olean, N. Y., CA $886,125, COUNTY HOME and INFIRMARY, Machias, LITTLE VALLEY, N. Y. Supervs., Cattaragus Co., Court House, Little Valley, N. Y. Bids Sept. 2. CD 8/13.

▲ **Colmar Constr. Co.,** 364 Gold St., Brooklyn 1, N. Y., CA $2,764,500, general contract NURSES' RESIDENCE and TRAINING SCHOOL, Metropolitan Hospital, 1st Ave. and E. 97th St., Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Aug. 12. CD 8/14, under LB.

Henry L. Chisholm, 16 Hudson St., New York, N. Y., Owner Builds, $900,000, APARTMENT, 486-94th Avenue of Americas and 78-81 West 12th St., NEW YORK, N. Y. CD 2/27.

▲ **Geller & Mitchell,** c/o Boak & Raad, archts., 175 Fifth Ave., New York 10, N. Y., Owner Builds, $2,500,000 20 story APARTMENT, eastside Second Ave. between East 47 and East 48 Sts., NEW YORK, N.Y. CD 11/6.

Brown & Matthews, Inc., 404 4th Ave., New York, N. Y., CA Est. $300,000, design and construct 16,000 sq. ft., masonry, steel SALES and SERVICE CENTER, ROSLYN HEIGHTS, N. Y. American Bosch, Div. American Bosch Arma Corp., Roosevelt Field, Garden City, L. I., N. Y.

▲ **Marcello Mezzullo, Inc.,** 132 Pearl St., Port Chester, N. Y., CA Est. $2,000,000, 200 room Hilton INN, 10 acre, Broadway and Thruway, Exit No. 9, TARRYTOWN, N. Y. Hilton Corp., Waldorf-Astoria, 301 Park Ave., New York 1, N. Y. Bids Sept. 22. CD 9/21.

Equity Brokerage Co., 60 Park Place, Newark, N. J., Owner Builds, $800,000, approx. 100 HOMES, Rte. 9, BAYVILLE, N. J. Paul West, 911 North Main St., Toms River, N. J., archt.

▲ **Romagnino Constr. Co.,** 99 River Ave., Cliffside Park, N. J., LB $1,201,450, HIGH SCHOOL ENGLEWOOD, N. J. City, City Hall, Englewood, N. J. Bids Sept. 29. CD 8/28;
Sappah Constr. Co., Inc., 7 N. Kinderkamack Rd., Montvale, N. J., LB $173,000, site work for high school (Englewood, N. J.).

J. A. Lawrence, 112 Brown Ave., Spring Lake, N. J., Owner Builds, $800,000, 50 HOUSES, Yale Ave., POINT PLEASANT BEACH, N. J. Frederick Bohlmeyer, 1313 Bay Ave., Point Pleasant, N. J., archt.

▲ **Louis H. Mahan Co.,** 140 West State St., Trenton, N. J., Owner Builds, $1,750,000, 4 story, 100 unit APARTMENT, Lower Ferry Rd., Ewing Twp., TRENTON, N. J. Laitow & Vogel, Levittown, Pa., archts.

Rutgers Constr. Co., 333 W. State St., Trenton, N. J., Separate Contracts, $400,000, OFFICE, West State St., TRENTON, N. J. Paul K. Gerhard, 328 48 St., New York, N. Y., engr. Masino F. Yezzi, 5 Beekman St., New York, N. Y., archt.

▲ **Forest Land Co.,** 15 Lee Place, Paterson, N. J., Owner Builds, $1,750,000, 50 HOUSES, Hamburg Turnpike near Pine Lake, WAYNE, N. J.

▲ **Joseph Vetri,** 175 Market St., Paterson, N. J., CA $2,250,000, 80 HOUSES, MacDonald Dr., WAYNE, N. J. Martin Mandon, 175 Market St., Paterson, N. J. Nathan J. Gurtman, 175 Market St., Paterson, N. J., archt.

J. E. Hurley Co., Inc., Box 95, Carlisle, Pa., LB $516,500, general constr. Shamokin State HOSPITAL addns., imprvs., SHAMOKIN, PA. General State Auth.; 18th and Herr Sts., Harrisburg, Pa. Bids Sept. 30. CD 9/9.

▲ **Prestressed Concrete, Inc.,** 517 N. 66th St., Phila., Pa., CA $1,300,000, MERCHANDISING MART, BETHESDA, MD. Bargain City, U.S.A., 2210 Walnut St., Phila., Pa. Zekan & Pitt, 233 Wilson Blvd., Arlington, Va., archts.

† **Westinghouse Electric Co.,** 150 Pacific Ave., Jersey City, N. J., CA $601,908, ELEVATOR PLANT for Office, National Institute of Health, G.S.-R3-B-6452, BETHESDA, MD. General Services Admin., 7th and D Sts. S.W., Wash. 25, D. C. CD 8/11, under LB.

Stoneybrook Bldg. Co., 859 N. Howard St., Baltimore 1, Md., Separate Contracts, $960,000, 80 brick, frame DWELLINGS, Stoneybrook Development, north of TOWSON, MD.

▲ **Magazine Bros.,** Woodward Bldg., Wash., D. C., Owner Builds, $1,500,000, 10 story DOCTOR'S BLDG., 1712 Eye St. N. W., WASH., D. C. Corning & Moore, 1302 18 St. N. W., Wash., D. C., archts. General Engineering Assn., 810 18 St. N. W., Wash., D. C., engr.

▲ **Baton Constr. Co.,** 1717 Sansom St., Phila., Pa., CA $1,500,000, Eleutherian Mills Historical LIBRARY, WILMINGTON, DEL. Longwood Foundation, Kennett Square, Pa. CD 8/18.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Orlando**—L. O. FACILITY—BA 10/26—Base Procurement Office, McCoy Air Force Base, L. O. Facility at McCoy Air Force Base, IFB-08-617-60-13. CD 9/24/58.

† **VIRGINIA**—BA 10/28—Bureau P. Rds., Dpt. Commerce, 920 S. Jefferson St., Roanoke,
Proj. 1815-D23—base course, bit. surf. treatment, etc., vicinity Hubbards Lane, Colonial Parkway. CD 9/21, under unclassified.

† **Mississippi**—BA 10/30—Soil Conservation Service Area Office, Gorden Bldg., Bankhead St., New Albany, two earthfill floodwater retarding structures Yellow Rabbit Creek, Sites LT-5-1 and LT-5-8 (Flood Prevention Program), Bid No. SCS 17-MS-60.

† **Florida**—BA 11/3—U. S. Eng., 575 Riverside Ave., Jacksonville, Canal 24, Section 2, Central and Southern Florida Flood Control, CIVENG-08-123-60-148. CD 9/29.

BUILDINGS—BA

La., New Orleans—ACADEMY—BA 10/22—St. Joseph Academy, 1200 Mirabeau Ave., 84,305 sq. ft. steel frame, masonry academy. Bodman & Murrell, 1175 Nicholson Dr., Baton Rouge, archts.

▲ **Va., Alexandria**—HOSPITAL—BA 10/26—Alexandria Hospital, 709 Duke St., Phase I, 150-bed hospital, Seminary Rd. Plans deposit $75. Saunders & Assoc., 121 S. Columbus St., archts. CD 3/17.

Va., Lynchburg—AUDITORIUM, etc.—BA 10/31—Sweet Briair College, Lynchburg, auditorium and Fine Arts Center. $885,000.

HOW TO HANDLE WET JOBS

IS THIS A RECORD FOR DEWATERING SILTY SAND & CLAY?

Concrete box culvert, Old Bridge, N.J. Contractor: Almeida Construction Co.

PHOTO, JUNE 1—Griffin equipment shipped that day. Difficult swampy soil required use of specially designed sand filters around the wellpoints.

JUNE 4. Wellpoint system installed over weekend and excavation well under way. Actually, the 5 ft of water was under control just 20 *minutes* after pumping started.

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BUILDINGS—SLC

Ky., Paducah—STORE—John W. Kieler, Arcade Bldg., soon lets contract, store. Over $400,000. Melvin Krumm, 502 W. 7th St., Los Angeles, Calif., archt. Lee Potter Smith & Assoc., 2200 Broadway, assoc. archts. J. C. Penney Co., lessee. CD 9/10.

Tenn., LaFollette—HOSPITAL ANNEX—BA LaFollette Hospital Assn., soon lets contract hospital annex $500,000. Dan Aitsshuler, LaFollette, archt.

HEAVY CONSTRUCTION—LB & CA

S. J. Bell Constr. Co., 3610 Wheeler Ave., Alexandria, Va., LB **$160,303**, Contr. 92, LB **$181,060**, Contr. 93, (11 bidders) integrated sewerage sys. Contr. 92, Lower Pimmit Run Trunk (plant to C.I.A. outfall) and Contr. 93 Lower Pimmit Run Trunk (C.I.A. outfall to Arlington Line) FAIRFAX, VA. Bd. County Supervs., Office Sanitary Engr., Fairfax, Va. Bids Sept. 28. CD 9/8.

FLORIDA—State Rd. Dpt., Holland Bldg., Tallahassee, **Langston Constr. Co.**, Orlando, Fla., CA **$886,165** converting existing road to 4-lane facility with limerock base widening strips Type 1 b. conc. surf. and binder course, Type 1 b. conc. surf. on existing pavement, widening 2 existing concrete bridges, 9.2 mi. SR 50 State Proj. Job No. 75050-3501, Orange Co. Bids July 28. CD 7/31, under LB.

▲ **FLORIDA**—State Road Dpt., Holland Bldg., Tallahassee. Bids opened 9/29.

Fla.—**Cone Bros. Contr. Co.**, Box 1259, Tampa 1, Fla., LB **$1,887,873**, (9 bidders), 4-lane divided limerock base, Type 1 b. conc. surf. course and binder course, limerock base shoulders, surf. tr. 7.095 mi. SR 400 FAI Proj. No. 1-4-1(20) 62, Job No. 16320-3405, Polk Co.;

Fla.—**W. H. Armston Co. Inc.**, Dunedin, Fla., LB **$1,609,490**, (13 bidders) 4-lane divided limerock base, b. conc. surf. course and binder course, limerock base shoulders, surf. tr. 5.416 mi. SR 400 FAI Proj. No. 1-4-1(21) 69, Job No. 16320-3406, Polk Co.;

Fla.—**Wiley N. Jackson Co.**, Box 1408, Roanoke, Va., LB **$1,600,533**, (17 bidders), 4-lane divided limerock base Type 1 b. conc. surf. course and binder course, limerock stabilized base shoulders, surf. tr., 4.812 mi. SR 400 FAI Projs. Nos. 1-4-1(25) 75, Job No. 16320-3407 and 1-4-2(19) 76, Job No. 902130-3401, Polk and Osceola Counties;

Fla.—**Anderson Contr. Co., Inc.**, Cross City, Fla., LB **$90,233**, (10 bidders), limerock stabilized base Type 2 surf. tr. 5.032 mi. SR 53, Fed. Aid Proj. No. S-293(4), Job No. 33520-3601 and State Job No. 33520-3602, Lafayette Co.;

Fla.—**Hubbard Constr. Co.**, Box 7217, Orlando, Fla., LB **$118,245**, (2 bidders) Type 1 b. conc. resurf. and 0.775 mi. SR S-526 State Proj. Job No. 75510-8601 Orange Co., Job No. 75600-3601 SR S-528-A, limerock base widening strips with Type 1 b. conc. surf. course 5.344 mi. Orange Co.;

Fla.—**L. L. Hall Constr. Co.**, Orange Park, Fla., LB **$213,970**, (7 bidders), limerock base Type 1 b. conc. surf. course 2.405 mi. SR S-16-A, State Proj. Job No. 78601-3601, St. Johns Co.;

Fla.—**R. H. Wright, Inc.**, Box 8068, Seminole Annex, Fort Lauderdale, Fla., LB **$1,053,484**, (9 bidders), limerock base, Type 1 b. conc. surf. course with binder course, 0.88 mi. SR 25 State Proj. Job No. 87090-3505, Dade Co.;

Fla.—**Marion Constr. Co.**, Ocala, Fla., LB **$260,452**, (5 bidders) limerock stabilized base, Type 2 surf. tr. 6.763 mi. near Perry, Job No. 38510-3601, SR S-361 C, Job No. 38653-3601, SR S-361-B in Perry, State Proj. Job No. 38500-3601, etc., Taylor Co.;

Fla.—**Pope Hauling Co.**, Quincy, Fla., LB **$94,255**, (4 bidders), limerock stabilized base or shell stabilized base Type 2 surf. tr. 1.859 mi. State Proj. Job No. 39510 3601 and Job No. 49540-3601, Franklin Co.;

Fla.—**B. B. Doan**, Box 939, Fort Lauderdale, Fla., LB **$223,570** (4 bidders), grading, sand-clay base, Type 2 surf. tr. 6.133 mi. SR S-69 Fed. Aid Proj. No. S-456(2), Job No. 47560-3601, Calhoun Co. CD 9/15.

Houston Contg. Co., 2807 Buffalo Speedway, Houston, Tex., CA Approx. **$675,000**, 27 mi. 20 in. gas gathering lines, south of Baton Rouge, LOUISIANA. United Gas Pipe Line Co., Box 1407, Shreveport 92, La. CD 4/22/58.

▲ **Panama, Inc.**, c/o Tennessee Bldg., Houston, Tex., CA Est. **$8,900,000**, 118 mi. 30 in. loop gas lines from Kilbourne, La. to Ballentin, Miss.; 60 mi. 30 in. Brownsville, Tenn. to Canadaville, Tenn. and from Bardwell, Ky. to Polk, Tenn., LOUISIANA, MISSISSIPPI, TENNESSEE and KENTUCKY. Trunkline Gas Co., 5650 Kirby St., Houston, Tex.; **C. S. LeNoir. Co.**, 311 E. 11th St., Austin, Tex., CA Est. **$2,850,000**, 57 mi. 30 in. loop gas line, Polk, Tenn. to Brownsville, Tenn. (Louisiana, Mississippi, Tennessee and Kentucky).

BUILDINGS—LB & CA

▲ **American Mortgage Investment Co.**, Woodward Bldg., Wash., D. C., Owner Builds, Over **$2,000,000**, 200-unit APARTMENT, N. Adams St. near Lee Hy., ARLINGTON, VA. Corning & Moore, 1302 18th St. N. W., Wash., D. C., archts. CD 4/15.

† **Reid & Hope**, 153 N. Main St., Suffolk, Va. CA **$586,000**, 2 story ADMINISTRATION BLDG. No. 135, Proj. 45-5172, KECOUGHTAN, VA. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Sept. 1, awarded Oct. 2. CD 9/8, under LB.

▲ **Grove, Shepherd, Wilson & Kruge Inc.**, 400 Madison Ave., New York, N. Y., LB **$3,384,240**, (10 bidders), 17 story MOTOR HOTEL, NORFOLK, VA. Triangle Motor Hotel, Monticello and Brambleton Ave., Norfolk, Va. Anthony F. Musolino, 706 S. Washington St., Falls Church, Va., archt.

James T. Sloan, Jr., Insurance Bldg., Richmond, Va., CA **$686,000**, 49 RESIDENCES, Old Gum Estates, RICHMOND, VA. Blair Land Corp., Insurance Bldg., Richmond, Va.

Thorington Constr. Co., New Market, Va. LB **$425,700**, (7 bidders), DORMITORY, STAUNTON, VA. Mary Baldwin College, Staunton, Va. CD 2/24.

Gervais Favrot Co., 330 Baltier Bldg., New Orleans, La., LB **$948,483**, (9 bidders), 10 story, rein.-con., frame, brick, tile, concrete block Y. M. C. A. addn., NEW ORLEANS, LA. Bd. of Y.M.C.A., 936 St. Charles St., New Orleans, La. Bids Sept. 29. CD 9/9.

Al J. Schneider, 7th St. Rd., Louisville, Ky., Owner Builds, Over **$500,000**, brick, rein.-con. MEDICAL ARTS addn., 1169 Eastern Parkway, LOUISVILLE, KY.

▲ **Dougherty-Liddell Constr. Co.**, 1360 E. McLemre Ave., Memphis, Tenn., CA **$1,600,000**, cantilevered, 5 story, bsmnt. OFFICE, 150-162 Madison St., MEMPHIS, TENN. Leader Federal Savings & Loan Assn., 158 Madison St., Memphis, Tenn. Walk C. Jones, Jr., 1215 Poplar St., Memphis, Tenn., archt. Awarded Sept. 25.

▲† **Combustion Engineering Co.**, 912 W. Main St., Chattanooga, Tenn., LB **$13,896,720**, boiler for 600,000 kw STEAM POWER PLANT, Green River, PARADISE, KY. Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn. CD 10/6.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **O., Cleveland**—ELECTRICAL POWER SYS.—BA 10/20—U. S. Eng., Engineer Park, Buffalo, Zone 7, N. Y., electrical power sys., **Cleveland Storehouse, Pier and** Wharf, IFB CIVENG-30-023-60-8. Extended date CD 9/14.

Ind., Richmond—BA 10/30—Richmond Water Works Corp., 14 N. 10 St., earth dam, spillway, intake, and impounding reservoir, on Middle Fork of The East Branch of Whitewater River, appurtenances. Plans deposit $50 Burgess & Niple, 2015 West Fifth Ave., Columbus, O., engrs. CD 8/27.

† **Wisconsin**—BA About 11/4—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul 1, Minn., extension, improv. breakwaters and harbor, Small-Boat Harbor, Lake Superior, Bayfield, CIVENG-21-018-60-15. CD 9/26/55.

(Continued on page 118)

THIS PANEL SUPPORTS ITSELF...

BUILDS SPANS UP

TO 184 FEET!

WONDER BUILDING®
"Truss-Skin"
ROOF SYSTEMS

There's nothing like it in the industry... a structural component that supports itself — and saves 50% in building costs, erection time! Double Corrugation is the reason. Patented double-curved and corrugated steel panels provide rugged strength and stability — span-free interiors. They're the only structural members required for the entire roof! Ask your Wonder Building distributor about "Truss-Skin" Roof Systems with this unique panel construction — or write Dept. L-1059

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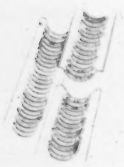

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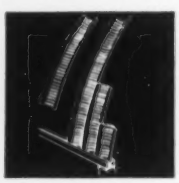
Bolt and nut assembly speeds erection, gives positive panel to panel connection . . . forms an unyielding roof with low weight-to-strength ratio.



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The board work is done, stress factors compiled — "Truss-Skin" roofs are precision-built, available in a wide range of widths, up to 184', in any length.

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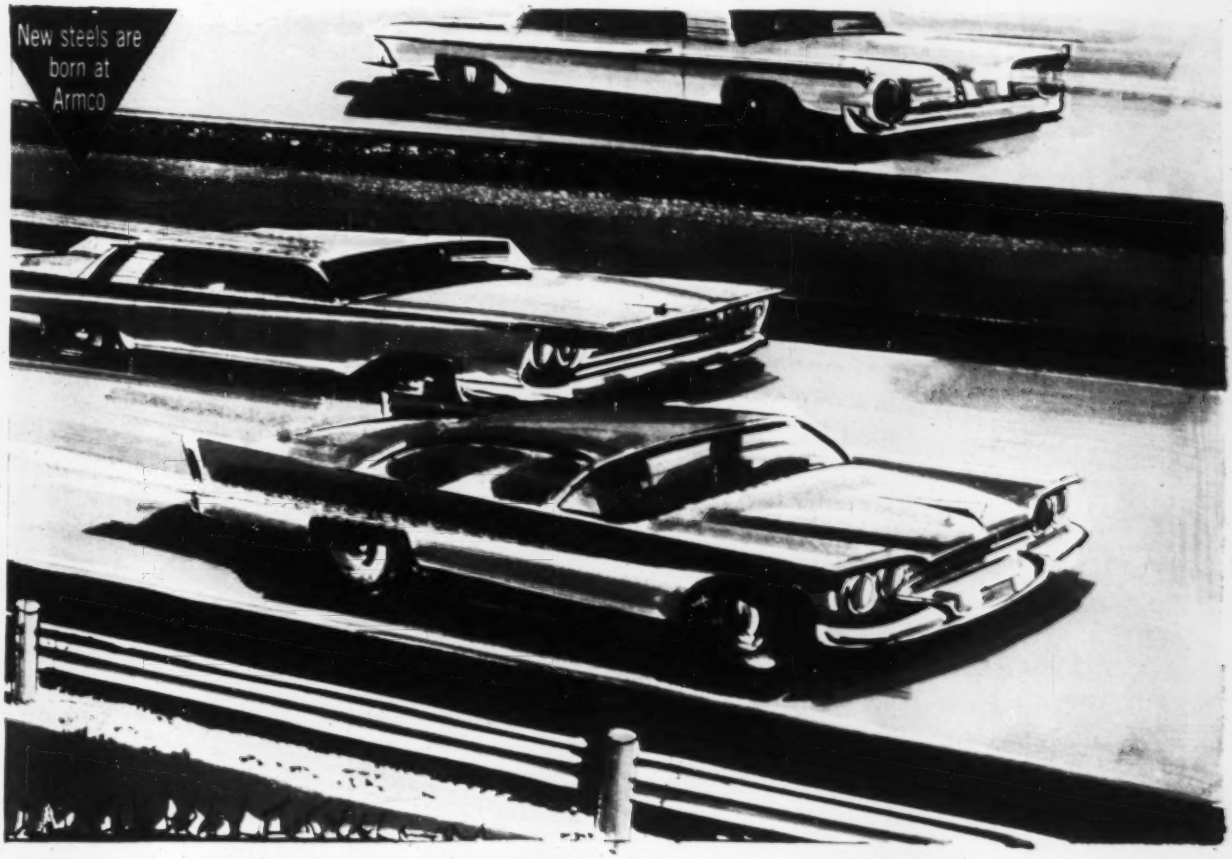
In twenty years of service, transverse earth pressures have cracked this concrete headwall, moving the top portion several inches. The 48-inch Armco Pipe is in good shape; joints are still intact.

Armco engineer inspects coating on 54-inch Armco PAVED-INVERT® Pipe under Pennsylvania Turnpike. The structure is rated as "excellent."



TURNPIKE AFTER 20 YEARS

Armco inspection team checks drainage structures; Report: condition "EXCELLENT"

When the original 160-mile segment of the Pennsylvania Turnpike was built in 1938-39, Armco Drainage Structures got an important assignment. Scores of Armco Structures, ranging in diameter from 24 inches to 72 inches, were installed to handle varying drainage requirements. Fill heights ranged up to 80 feet.

This year an Armco inspection team, following up inspections in 1941 and 1948, checked the 20-year performance of the structures. Report: "EXCELLENT CONDITION." The continuing good alignment, uniform cross section and material durability are a tribute to the men who designed and built the road. This performance is another reason why more Armco Corrugated Metal Drainage Structures are being used in today's highway construction programs. They are proved in service.

This 36-inch Armco Pipe is typical of many structures serving under relatively low fills on the Turnpike. Armco Pipe has the flexible strength of corrugated metal design. It resists impact and vibration of traffic.

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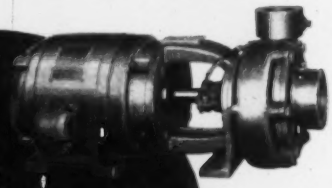

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Dealers in principal cities, affiliates around the world.

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SIKA CHEMICAL CORPORATION

Passaic, N. J.

(Continued from page 114)

Mich., Detroit—BA 11/10—At office M. F. Wagnitz, city engr., 528 City-County Bldg., Zone 25. Contr. PW-3030, Section I, 0.71 mi. concrete sewers to be constr. tunnel East Seven Mile Rd. from Outer Dr. to Mound Rd., incl. reconstr. concrete Bellmouth jct. chamber and connections between proposed sewer and existing sewer in East Seven Mile Rd.; Contr. PW-3031, Section II, 0.76 mi. concrete sewers to be constr. tunnel East Seven Mile Rd. from Mound Rd. to Conant Ave., incl. connections between this proposed sewer and existing sewer in East Seven Mile Rd. Plans deposit $25 per set. CD 10/3/57.

BUILDINGS—BA

Ind., Evansville—SCHOOL—BA 10/26—Bd. Trustees, Tekoppel School, Tekoppel School addn. $682,000.

O., Middletown—SCHOOL—BA 10/27—Bd. Educ., Manchester Rd., 1 story, bsmntless, 60,000 sq. ft. brick, steel Junior High School. $900,000. Plans deposit $25. Howard & Thos. McClorey, 3002 Woodburn, Cincinnati, archts. CD 2/10.

O., Elyria—SCHOOL—BA 10/29—Bd. Educ., Elywood Junior High School. $400,000. Outcalt, Guenther & Assoc., 13124 Shaker Sq., Cleveland, Zone 20, archts. CD 11/11.

▲ O., Fairfield—SCHOOL—BA 11/3—Bd. Educ., 5050 Dixie Hy., 1 story, bsmnt., 90,000 sq. ft. high school, Nilles Rd. $1,495,000. Plans deposit $25. Winkler, Ranck & Beeghly, Dollar Fed. Bldg., Hamilton, O., archts. Harry Balke & Assoc., 2330 Victory Parkway, Cincinnati, engrs. CD 4/24.

Wis., Menomonie—SHOP—BA 11/5—Bd. of Regents of State Colleges, Madison, 3 story, rein-con., steel, brick shop, $700,000. Plans deposit $25. G. J. Paul & S. M. Playter, 102 E. Grand Ave., Eau Claire, archts. CD 3/20/58.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO—Dpt. Hys., State Dpt. Bldgs., Columbus, Zone 15. Bids opened 9/29.

O.—Claude A. Janes, Inc., P. O. Box 127, Chesterhill, O., LB $88,978, est. $112,700 (5 bidders),, Type T-35 on B-19, 0.523 mi. SR 124-1.48, 0.53, S-29 (5) S-1327, Proj. 500, Athens Co.;

O.—J. A. Jones Constr. Co. of Charlotte, N. C., P. O. Box 108, Berlin Heights, O., LB $3,998,137, est. $5,014,900 (13 bidders), Type T-71 and structures 3.418 mi. SR 1-2.16, ACI-90-1(21) 21 new) 1-110.8 (19) (old), City of Willoughby and Village of Willoughby Hills, Proj. 502, Lake Co.;

O.—Central States Constr. Co., Crosby, Minn., LB $154,869, est. $191,000 (7 bidders), Type T-71, 1.201 mi. USR 21-0.03, Proj. 503, Summit Co. CD 9/10.

Kassouf Co., 9715 Clinton Rd., Cleveland 2, O., LB $710,045, est. $750,000 (6 bidders), South Taylor Rd. Storm Relief Sewer, CLEVELAND HEIGHTS, O. City, 2953 Mayfield Rd., Cleveland 18, O. Bids Sept. 28. CD 9/25.

V. & C. Constr. Co., Upper Sandusky, O., CA $225,630, (11 bidders), trunk water mains, Section 1, OREGON, O. City, City Hall, Oregon, O. Bids Sept. 23, awarded Sept. 28. CD 9/9.

▲ INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.

J. A. Jones Constr. Co., P. O. Box 108, Berlin Heights, O., CA $2,715,728, est. $2,909,256 rein.-con. 7.13 mi. US 421, Shelby Co. Bids Feb. 24, awarded Sept. 28. CD 3/2, under LB.

Chas. Bohrer, Inc., 2174½ E. 2 St., Centralia, Ill., LB $960,000, est. $848,000, sewerage and WW addns., CARBONDALE, ILL. City, City Hall, Carbondale, Ill. Bids Sept. 15. CD 9/9.

▲ S. J. Groves & Sons, 104 Reynolds St., Springfield, Ill., LB $4,427,292, (5 bidders), runway extension, O'Hare Airport, Contr. B-7, CHICAGO, ILL., City, City Hall, Chicago, Ill. Bids Oct. 2. CD 9/22.

▲ Santucci Constr. Co., 5115 Church St., Skokie, Ill., LB $1,238,520, est. $1,350,000 (4 bidders), Proj. 80.85-59-105A, water mains and sanitary sewers, O'Hare Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. Naess & Murphy, 80 E. Jackson Blvd., Chicago 4, Ill., engrs. CD 4/3.

Walsh Bros., 3710 S. Western Ave., Chicago, Ill., LB $160,316, swimming pool, John Harlan Marshall High School, 47th St. and Michigan Ave., CHICAGO, ILL., Bd. Educ., 228 N. LaSalle St., Chicago, Ill. Bids Sept. 21. CD 8/31.

Arcole Midwest Corp., 3225 Main St., Skokie, Ill., LB $718,370, est. $850,000, Phase 1, beach improvs., jetties, sand fill and rip-rap, Lee-Greenleaf, Clark St. Beach, EVANSTON, ILL. City, City Hall, Evanston, Ill. Bids Aug. 28. CD 1/10.

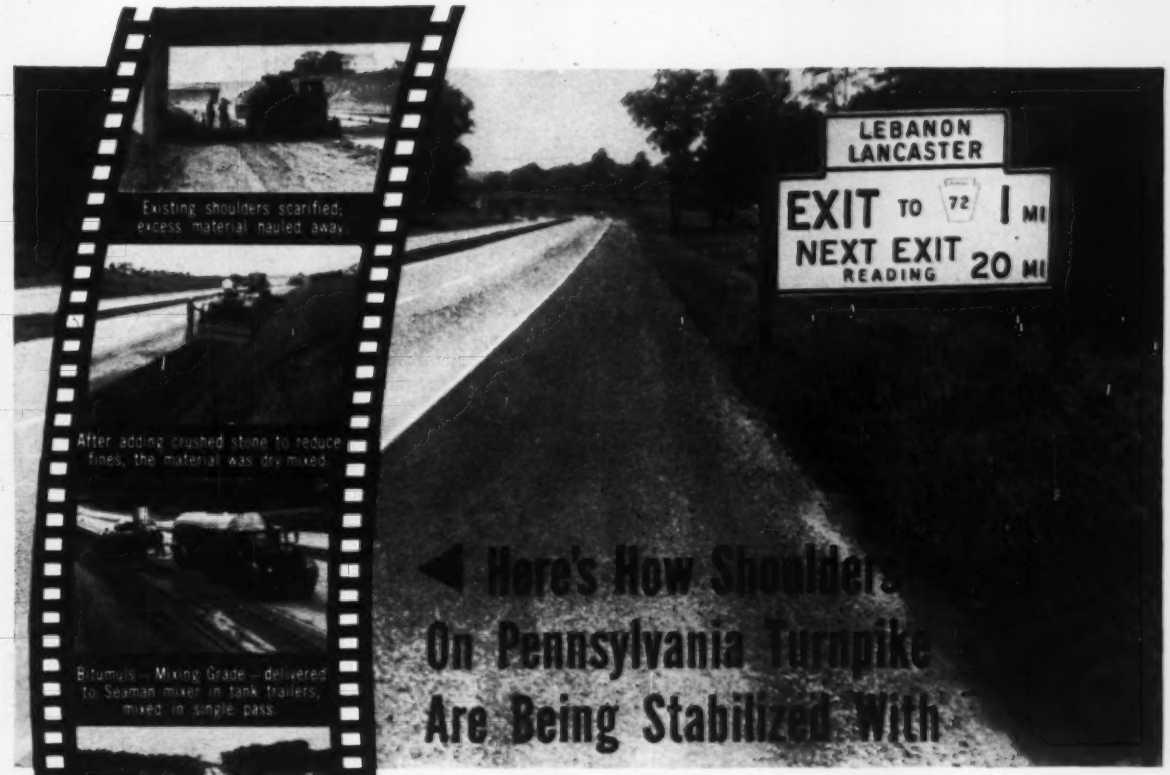
Viland Constr. Co., Bedford Rd., Morris, Ill., CA $119,575, gravel and stone base paving 3.6 mi. county road, De Kalb, Sec. 50 G-15D, SYCAMORE, ILL. De Kalb Co. Bldg., Sycamore, Ill. Awarded Sept. 15. CD 12/28/45.

Three-A-Builders, Inc., 1270 Maxwell Ave., Evansville, Ind., CA $842,500, Anderson St. Basin section of storm drainage sys., URBANA, ILL. Dpt. P. Wks. & Supply, Urbana, Ill. CD 3/4.

▲ WISCONSIN—State Hy. Comm., State Office Bldg., Madison. Bids opened 9/29.

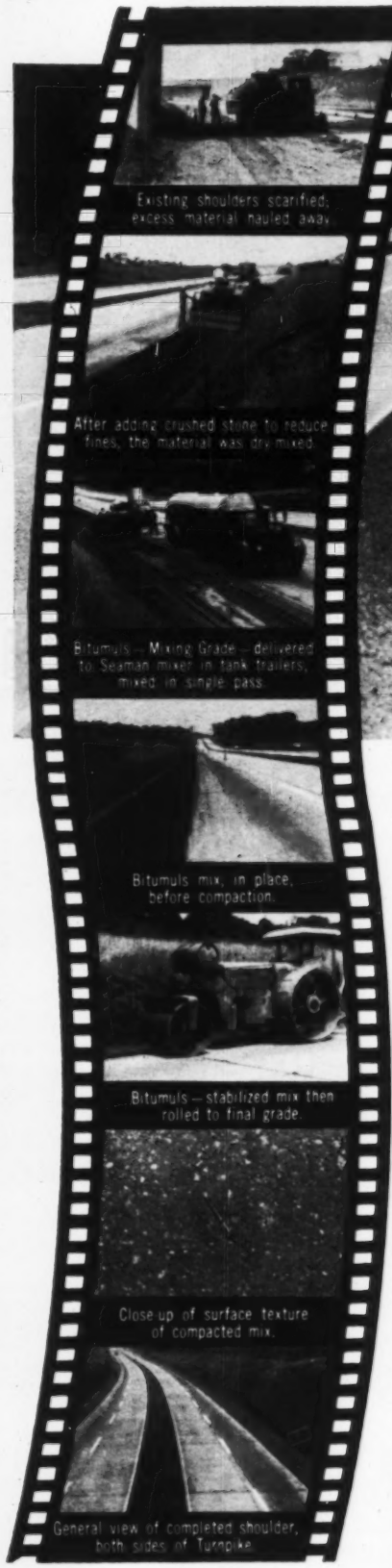
Wis.—P. C. Kaiser Constr., Portage, Wis., LB $352,773, (10 bidders), grade and subbase 2.476 mi. Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect. and West County Line-Portage Rd. (Fox Glen Sect.), Interstate Hy. 90 and S. T. Hy. 33, Contr. 1, Projs. 1-90-2 (18)105 and T 035-1(12), Columbia Co.; LB $419,457 (18 bidders), grade and subbase 3.448 mi. Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.), Inter-

(Continued on page 120)



◀ Here's How Shoulders On Pennsylvania Turnpike Are Being Stabilized With

BITUMULS


Existing shoulders scarified; excess material hauled away.
After adding crushed stone to reduce fines, the material was dry-mixed.
Bitumuls – Mixing Grade – delivered to Seaman mixer in tank trailers; mixed in single pass.
Bitumuls mix, in place, before compaction.
Bitumuls – stabilized mix then rolled to final grade.
Close up of surface texture of compacted mix.
General view of completed shoulder, both sides of Turnpike.

Proved best by comparative test, Bitumuls emulsified asphalt is now being used to stabilize most of the 132 miles of 8-foot shoulder along the Pennsylvania Turnpike.

The original untreated shoulders were inadequate. In 1955, engineers of the Turnpike Maintenance Materials Department, working with Michael Baker, Inc., of Rochester, Penna., (consulting engineers) took samples and ran tests. Based on their findings, various methods and materials were specified for test-sections of replacement shoulders in 1956.

Test Results:

After a winter of service, the test sections were checked and evaluated early in 1957. The Bitumuls stabilized section had performed best, and was specified for the job.

Bitumuls shoulder stabilization is fast and economical (see left). The untreated shoulders are scarified; some material is removed. Crushed stone is added to reduce the fines content, and the material is dry-mixed in place.

Bitumuls delivered by tank-trailer, is pumped, cold, through the mixer. In a single pass the material is mixed and laid, ready for rolling.

Work on the Turnpike shoulders started in 1957 from Mile Post 230 (Gettysburg Interchange) and will be completed in 1959 at Mile Post 296 (Morgantown Interchange).

The size and importance of this Turnpike job sharply underscores one point: Bitumuls provides adequate stability for long-lasting, heavy duty shoulders at low cost!

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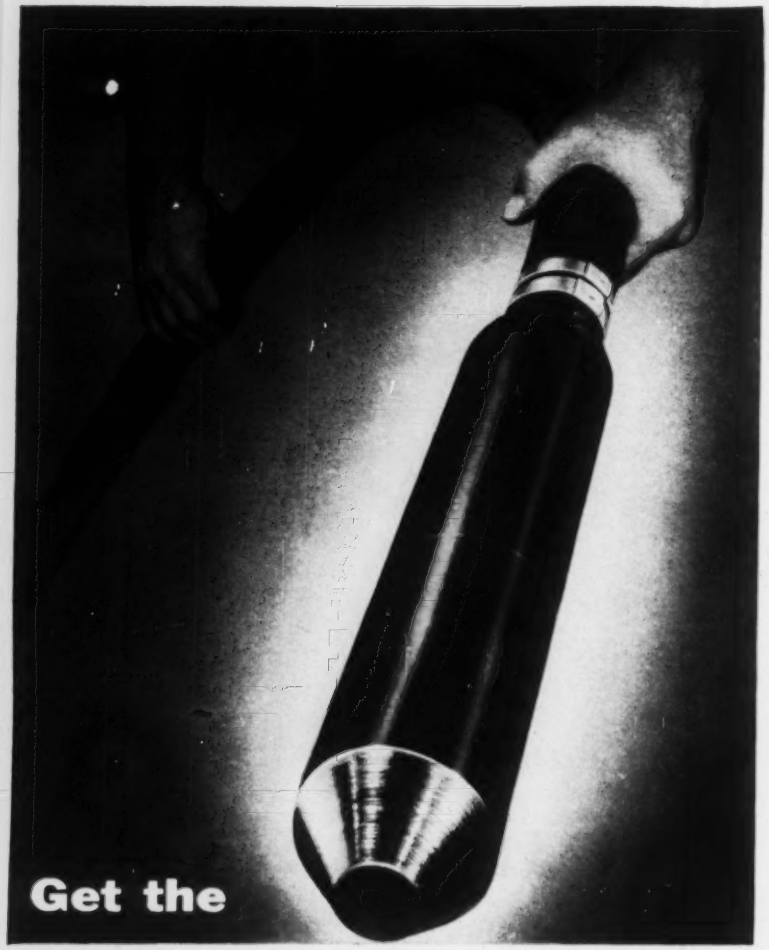

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(Continued from page 118)

state Hy. 90, Contr. 2, Proj. I-90-2(18)105, Columbia Co.;

Wis.—**John F. Bloomer & Co.**, 341 W. College Ave., Appleton, Wis., LB **$795,105** (9 bidders), grade, subbase, base and b. conc. 4.022 mi. Williams Bay-Lake Geneva Rd., S.T. Hys. 36 and 50, Contr. 1, Proj. F 064-1(9), Walworth Co.;

Wis.—**F. C. Raemisch & Son**, Waunakee, Wis., LB **$445,935** (12 bidders), grade and subbase 2.251 mi. Lake Delton-Madison Rd. (S.T.H. 19-U.S.H. 151 Sect.), Interstate Hy. 90, Contr. 1, Proj. I-90-2(15) 131, Dane Co.;

Wis.—**Ryan, Inc.**, Janesville, Wis., LB **$459,670** (6 bidders), grade and subbase 5.682 mi. Monticello-New Glarus and S.T.H. 69-Monticello Rds., S.T. Hys. 69 and 39, Contr. 1, Projs. T 032-1(7) and T 0435(6), Green Co.;

Wis.—**Alexander Constr. Co.**, 4641 Hiawatha Ave., Minneapolis, Minn., LB **$157,110** (4 bidders), grade and subbase 6.391 mi. South County Line-Osceola Rd., S.T. Hy. 35, Contr. 1, Proj. F 028-3(12), Polk Co.;

Wis.—**The White Constr. Co.**, 828 N. Broadway, Milwaukee, Wis., LB **$179,816** (9 bidders), grade, base and b. conc. 8.442 mi. U.S.H. 41-U.S.H. 45 and U.S.H. 45-East County Line Rds., S.T. Hy. 60, Contr. 1, Projs. S 0148(5) and T 0148(5), Washington Co.;

Wis.—**Reliance Constr. Co.**, 1011 S. 8 St., Sheboygan, Wis., LB **$131,848** (10 bidders), single aggregate bit. surf. 9.02 mi. Egg Harbor-Ephraim and Sister Bay-Ellison Bay Rds., S.T. Hy. 42, Contr. 1, Projs. T 01-5(18) and T 0431(10), Door Co.;

Wis.—**C. C. Linck**, Beaver Dam, Wis., LB **$130,500** (10 bidders), base course 6.735 mi. Lake Delton-Madison Rd. (C. T. H. V-U.S.H. 151 Sect., and Hoffland Overpass approaches), Interstate Hy. 90, Contr. 1, Projs. I-90-2(19)126 and IG-90-2(35)130, Dane Co.;

Wis.—**Wm. J. Kennedy & Son**, Janesville, Wis., LB **$196,287** (10 bidders), base course 5.682 mi. Monticello-New Glarus and S.T.H. 69-Monticello Rds., S.T. Hys. 69 and 39, Contr. 2, Proj. T 032-1(7) and T 0435(6), Green Co.;

Wis.—**Dean B. Eckstrom**, Amery, Wis., LB **$170,107** (4 bidders), base course 8.429 mi. Ellsworth-Waverly and Ellsworth-Martell Rds., S.T.Hy. 72 and U. S. Hy. 63, Contr. 2, Projs. S-075(9) and S-0289(4), Pierce Co. CD 9/11.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison, Bids opened 9/29.

Wis.—**Nelson Constr. Co.**, Black River Falls, Wis., LB **$146,891** (15 bidders), Structures B-11-30 and B-11-33, Lake Delton-Madison Rd., (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 3, Proj. I-90-2(18)105, Columbia Co.; LB **$146,140** (12 bidders), Structures B-11-34 and B-11-35, Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 5, Proj. I-90-2(18)105, Columbia Co.;

Wis.—**Pertzsch Constr. Co.**, Onalaska, Wis., LB **$113,900** (10 bidders), Structures B-11-31 and B-11-32, Lake Delton-Madison Rd., (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 4, Proj. I-90-2(18)105, Columbia Co.;

Wis.—**R-W Constr. Co.**, 3140 W. Fond du Lac Ave., Milwaukee, Wis., LB. **$133,819** (11 bidders), Structures B-13-95, 96 and 97, Lake Delton-Madison Rd. (S.T.H. 19-U.S.H. 151 Sect.), Interstate Hy. 90, Contr. 2, Proj. I-90-2 (15)131, Dane Co.;

Wis.—**Edward Kraemer & Sons**, Plain, Wis., LB **$364,292** (14 bidders), Structures B-13-98, 99 and 100, Lake Delton-Madison Rd. (S.T.H. 19-U.S.H. 151 Sect.), Interstate Hy. 90, Contr. 3, Proj. I-90-2 (15) 131, Dane Co.;

Wis.—**Thos. Bentley & Son**, 3131 Mill Rd., Milwaukee, Wis., LB **$149,278** (10 bidders), Structures B-40-81, East-West Expressway (Hawley Rd. overpass), Interstate Hy. 94, Contr. 1, Proj. I-94-4(28)305, Milwaukee Co. CD 10/5.

Village, 13555 Juneau Blvd., Elm Grove, Wis., rejected bid July 23, swimming pool, recreational facilities, ELM GROVE, WIS. LB **$553,690**. CD 8/3, under LB.

▲† **Great Lakes Dredge & Dock Co.**, 228 N. LaSalle St., Chicago, Ill., **$6,464,940**, dredging Round Island Shoals, St. Mary's River and Ontario near Sault Ste. Marie, CIVENG-20-064-60-11, MICHIGAN and ONTARIO. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids Sept. 23. CD 9/25.

BUILDINGS—LB & CA

▲ **Norman Wolf**, 6650 Glen Acres Dr., Cincinnati, O., Owner Builds, **$1,200,000**, 70 one fl., bsmt., brick HOMES on new street off Compton Rd., CINCINNATI, O. Jas Wald & Assoc., 2565 Galbraith Rd., Cincinnati, O., engrs. Awarded Sept. 30.

▲ **Fruin-Colnon Contg. Co.**, 1595 E. Epler St., Indianapolis, Ind., CA Est. **$12,000,000**, CEMENT PLANT, MITCHELL, IND. Lehigh Portland Cement Co., Mitchell, Ind. CD 2 12.

▲ **Kuhne-Simmons Co.**, 1064½ S. Neal St., Champaign, Ill., CA **$3,680,267**, general contract three HOUSING UNITS, FOOD SERVICE BLDG., southeast parade ground area, University of Illinois, URBANA, ILL.; University of Illinois, State Office Bldg., Springfield, Ill. Grand total $4,690,588. Bids July 28, awarded Sept. 10. CD 8 24, under LB;

R. Hays Co., 920 W. Bradley St., Champaign, Ill., CA **$404,700**, plumbing, (Urbana, Ill.);

Bellis & Miller, 13 Main St., Champaign, Ill., CA **$605,621**, heating, (Urbana, Ill.).

▲ **Hoffman Co., Inc.**, 1519 N. Oneida St., Appleton, Wis., CA **$1,843,200**, general contract HIGH SCHOOL, OSHKOSH, WIS., Bd. Educ., Oshkosh, Wis. Bids Sept. 10. CD 9 21, under LB;

A. Winter & Sons Co., 1216 W. Wisconsin Ave., Appleton, Wis., CA **$576,475** heating and ventilating, (Oshkosh, Wis.).

(Continued on page 122)

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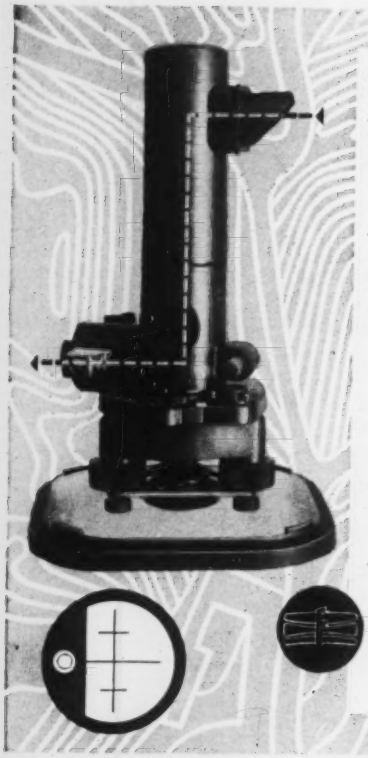

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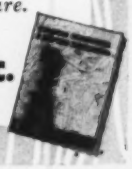

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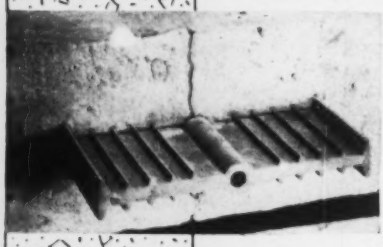

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(Continued from page 120)

HEAVY CONSTRUCTION—BA

† **Minnesota**—BA About 10/20—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, channel clearing and snagging, Minnesota River, CIVENG-21-018-60-11.

† **Ark., Little Rock**—STORAGE, BASE—BA About 10/29—U. S. Eng., P. O. Box 867, Little Rock, 4,000 sq. ft. Ordnance Area Magazine Cubicle, Job No. Little Rock AFB-MCAF Storage, Base, M/cubicle magazine, Item No. 99-003 (422-253), Little Rock Air Forte Base, ENG-03-050-60-16. CD 9/9/58.

† **Texas**—BA 10/29—Soil Conservation Service, Dpt. Agriculture, First National Bank Bldg., P. O. Box 417, Temple, floodwater retarding structures (flood prevention program) consisting earthfill embankments and appurtenances, Jim Ned Creek of Middle Colorado River Watershed, Sites Nos. 15, 16 and 17, near Lawn, Taylor Co., Inv. No. SCS 14-TX-60.

† **Kan., Topeka**—G/M ASSEMBLY, etc.—BA On Or About 11/3—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., G/M assembly and technical supply rehabilitation, Forbes Air Force Base, ENG-23-028-60-13. CD 9/28.

† **Ark., Little Rock**—LANDSCAPING—BA About 11/3—U. S. Eng., P. O. Box 867, Little Rock, landscaping Item No. 9Z-004 (utilities) Little Rock Air Force Base, ENG-03-050-60-17. CD 4/19, under LB.

† **Kan., Topeka**—G/M ASSEMBLY, etc.—BA 11/3—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., G/M assembly and technical supply rehabilitation, Forbes Air Force Base, ENG-23-028-60-13. CD 10/5.

† **Ark., Blytheville**—STORAGE BASE—BA About 11/4—U. S. Eng., P. O. Box 867, Little Rock, 1 story 4,500 sq. ft. cubicle magazine Job No. Blytheville Air Force Base-MCAF, Storage Base M/Cubicle Magazine, Item No. 00-002 (422-253) Blytheville Air Force Base, ENG-03-050-60-18. CD 9/17/57.

† **Texas**—BA 11/5—Bureau Reclamation, Dpt. Interior, Weslaco, clearing and constr. earthwork, concrete lining and structures for rehabilitation H lateral Station 1 plus 10 to 276 plus 96, Mercedes, Hidalgo Co., Lower Rio Grande Rehabilitation, Proj. Spec. DC 5245.

† **Colorado**—BA 11/12—Bureau Reclamation, Dpt. Interior, Bldg 1A, Denver Federal Center, Denver, 2 generator-voltage switchgear assemblies and bus structures Upper and Lower Molina powerplant, Collbran Project, DS 5246. CD 9/19/44.

BUILDINGS—BA

▲ **Tex., Abernathy**—SCHOOL—BA 10/22—Abernathy Ind. School Dist., Junior High School, elementary primary school, field house, shop homemaking and administration bldg. remodeling. $1,000,000. Plans deposit $25. Atcheson, Atkinson & Cartright, Sanford Bldg., 1007 Texas Ave., Lubbock, archts.-engrs. CD 6/19.

S. D., Deadwood—HOSPITAL—BA 10/27—St. Joseph Hospital, 2 story, bsmnt., hospital addn. $500,000. Extended date. Shifflet, Backstrom, Hutchison & Dickey, Inc., 17 W. Franklin Ave., Minneapolis, Minn. archts. L. C. Gross, 507 Sexton Bldg., Minneapolis, Minn., assoc. engr. R. Ballmes, 1919 Central Blvd., Rapid City, engr. CD 9/16.

▲ **Tex., Fort Worth**—ADMINISTRATION—BA 10/27—Texas Christian University, University Dr., 3 story, bsmnt. 64,500 sq. ft., concrete frame, brick, stone administration bldg. $1,000,000. Plans deposit $50. Preston M. Geren, 1607 Fort Worth National Bldg., archt. CD 3/19.

▲ **Minn., St. Cloud**—SCHOOL—BA 10/29—Bd. Educ. Independent School Dist. No. 742, 2 story Junior High School. $1,700,000. Plans deposit $40. Traynor & Hermanson, 311 Granite Exchange Bldg., archts. V. E. Siddens, Woolworth Bldg., assoc. archts., Gausman & Moore, Inc., E. First National Bank Bldg., St. Paul, consult. engr. CD 7/20.

Mo., Columbia—VETERINARY CLINIC—BA 10/29—Curators of University of Missouri, 126 Jesse Hall, 2 story, 39,000 sq. ft. 204x270 ft., brick, stone trim, rein.-con. etc. veterinary clinic, incl. laboratories, classrooms, offices, etc., Rollins St. and S. Williams St. Over $400,000. Gentry & Voskamp, 4 W. 13th St., Kansas City 5, Mo., archts. CD 6/4.

Wyo., Newcastle—SCHOOL—BA 10/29—School Dist. No. 1, 15 Stampede St., 60,000 sq. ft. Gertrude Burns Grade School addn. $900,000. Goodrich & Wulking, 722 E. Yellowstone, Casper, archts. CD 8/19.

HEAVY CONSTRUCTION—LB & CA

Platte Valley Constr. Co., 900 South Adams St., Grand Island, Neb., LB $744,089, (5 bidders), Judicial Ditch No. 19, Part I, floodways; LB $172,641, (5 bidders), Judicial Ditch No. 19, Part II, bridges, BENSON, MINN., Swift Co., Benson, Minn. Bids Sept. 23. CD 8/19.

† **Hardwick Bros. Co.**, 1st State Bank Bldg., Beardstown, Ill., LB $663,553, est. $601,403 (7 bidders), levee and channel alterations Unit III, Section 2, Little Sioux River, Monona Co., CIVENG-25-066-60-13, IOWA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Sept. 29. CD 9/11.

KANSAS—State Hy. Comn., Great Bend. Bids opened 10/1.

Standard Constr. Co., Inc., 519 S. Broadway, Suite 6, Wichita 2, Kan., LB $615,466, (3 bidders), concrete pavt. 6.711 mi. SP 54-8 F-038-3 (23), Butler Co. CD 9/17.

▲ **ARKANSAS**—State Highway Dpt., State Capitol, Little Rock. Bids opened 9/30.

Ark.—Guy H. James Constr. Co., 4901 N. Sewel, Oklahoma City, Okla., LB $377,737, abutments and piers for

(Continued on page 124)

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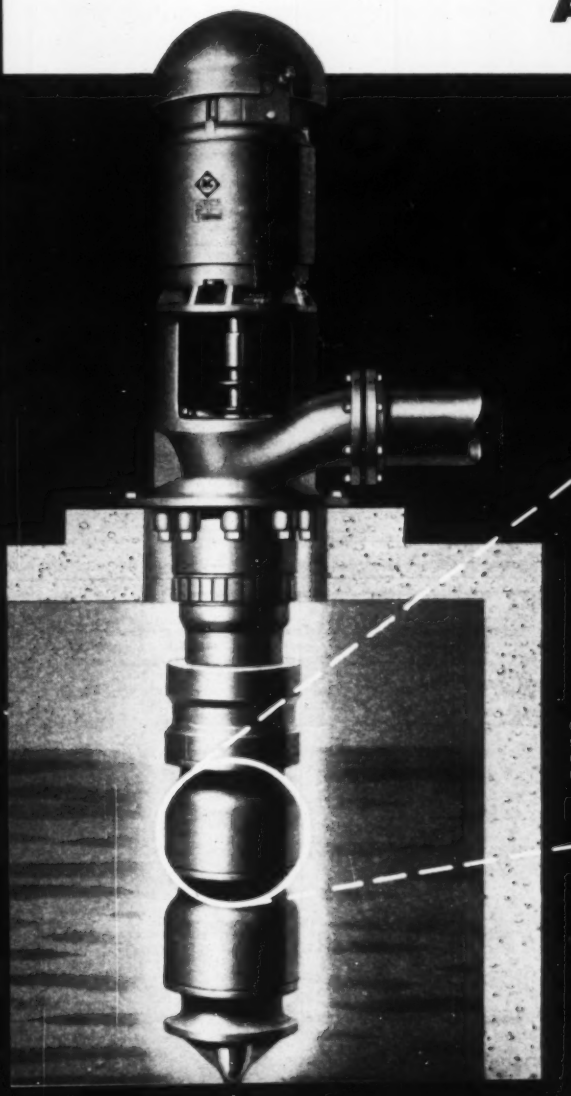
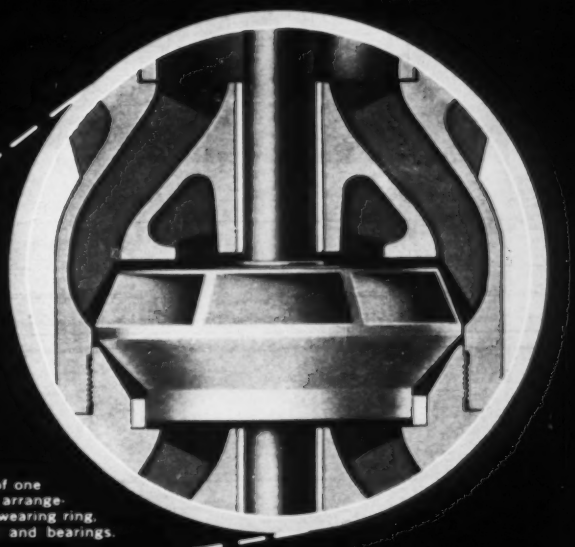


Many advantages — Self-priming • eliminate suction piping costs • save space, motor support and discharge nozzle are integral • low first cost • increase pressure easily • operate quietly • low maintenance with one stuffing box • no motor flooding.



Cross-section of one stage showing arrangement of bowl, wearing ring, impeller, shaft and bearings.

Many applications — Water systems, irrigation, condenser systems, bilge and sump service, dry docks, fire equipment, filter washing, recirculation, transfer pumping, process pumping, cooling condensers and diesel engine jackets, air conditioning, caisson and mine dewatering, general-purpose pumping.

(Continued from page 122)

bridge Devils Fork of Little Red River on Greers Ferry Road relocation Highway 16, Cleburne Co.; LB $302,963 abutment and piers for bridge on Little Red River near Higden on Greers Ferry road relocation Highway 16, Cleburne Co.;

Ark.—Linwood Smith Constr. Co., Lake Village, Ark., LB $463,476, West Monticello bypass 4.49 mi., part of Highway 81, Drew Co.;

Ark.—S. M. Dixon Constr. Co., Warren, Ark., LB $452,073, surf. 7.4 mi. Highway 27 from near Story northward to near Aly, Montgomery and Yell Counties;

Ark.—Ben M. Hogan Co., P. O. Box 2860, Little Rock, Ark., LB $607,190, reconstruction 12.06 mi. Highway 64 between Ozark and Mulberry River Bridge, Franklin Co. CD 9/16

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock. Bids opened 9/30.

Ark.—Graves Brothers Constr. Co., Dollarway Road, Pine Bluff, Ark., LB $397,322, relocation 4.73 mi. Highway 82 from near Junction Urbana Rd. eastward to near Lapile Bayou, Union Co.; LB $160,675, surf. 2.06 mi. Highway 82 eastward from junction with Highway 167, Union Co.;

Ark.—Freshour Corp., Sweet Home, Ark., LB $227,466, surf. 5.37 mi. Highway 31 between Beebe and Antioch, White Co.; LB $107,155, surf. 10.25 mi. Highway 19 from Delight southward, Nevada and Pike Counties;

Ark.—Northwest Arkansas Asphalt Co., Fayetteville, Ark., LB $179,870, surf. 5.12 mi. Highway 170 from near West Fork southward, Washington Co.;

Ark.—Ben M. Hogan Co., P. O. Box 2860, Little Rock, Ark., LB $338,456, reconstruction 4.82 mi. Highway 67 from White County Line, northeastward Jackson Co.;

Ark.—W. R. Fairchild, Ltd., Farmerville, La., LB $2,740,545, south terminal interchange 1 mi. as part of new Greater Little Rock expressway, Pulaski Co. CD 9/16.

▲† **General Electric Co.,** 610 Electric Bldg., Omaha, Neb., LB $1,346,030 (6 bidders), all schedules, furnishing 14.4 KV station type switchgear, 13.8 KV metal-clad switchgear generator neutral grounding equipment and metal enclosed isolated-phase bus structures near Pierre, Oahe Reservoir Proj., ENG-25-066-60-11, LB $117,760, Sched. A, 13.8 KV metal clad switchgear generator, neutral grounding equipment, LB $700,965 (6 bidders), Sched. C, 14.4 KV Station Type switchgear, switchgear cubicle, isolated phase bus structures and spare parts, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Sept. 30. CD 9/17.

Westinghouse Corp., 310 S. 24th St., Omaha, Neb., LB $523,020, Sched. B, 14.4 KV station type power circuit breaker (South Dakota).

▲ **Foor Engineering Co.,** 1357 SW 11th St., Oklahoma City, Okla., CA $825,000, 2750 hp pump station, Files, CA $785,000, 2750 hp pump station, Willis Stations; CA $450,000, pump station, Joy, TEXAS. Sinclair Pipe Line Co., 2119 Lofland St., Dallas, Tex. Grand total $2,060,000. CD 7/27.

Lone Star Gas Co., 301 S. Harwood St., Dallas, Tex., Owner Builds, $360,000, 36 mi. 20 in. natural gas line, Dallas area, Dallas Co., TEXAS. CD 7/16.

McVean & Barlow, c/o owner, CA $238,000, 35 mi. 2- to 8-in. crude gathering sys., Tovaharead, Reeves Co., TEXAS. Pasotex Pipeline Co., 1st National Bank Bldg., Dallas, Tex.

W. G. Arnot, Jr., Albany, Tex., Owner Builds, $135,000 earthen water injection proj., off Cook Ranch Field, ALBANY TEX. CD 9/29.

J. M. Dellinger, Inc., Box 4427, Corpus Christi, Tex., LB $390,528, street reworking, repairing, surf., CORPUS CHRISTI, TEX., City, City Hall, Corpus Christi, Tex., Bids Sept. 23. CD 9/9.

T. H. Lee, 401 N. Tancahua St., Corpus Christi, Tex., LB $103,727, street drainage (Corpus Christi, Tex.).

R. F. Beeler, Contractor, & Golfcrest Lumber & Supply Co., 8111 Easthaven Blvd., Houston, Tex., Owner Builds, $130,000, sanitary-storm sewers, Colonial Hills Subdivision, off Hy. 75, HOUSTON, TEX. CD 9/4.

Kern Investment Co., 2472 Bolsover St., Houston, Tex., Owner Builds, $57,000, earth site development, Riverbrook, HOUSTON, TEX.

Russ Mitchell, Inc., 5304 Old Spanish Trail, Houston, Tex., LB $423,362, grade separation Intersection Woodway St. and Memorial Dr., HOUSTON, TEX. City, City Hall, Houston, Tex. Frank Baldwin, c/o owner, Houston, Tex., dir. Pub. Wks. Bids Sept. 23. CD 3/12.

Gaylord Constr. Co., 806 Blodgett St., Houston, Tex., LB $217,919, exten. Woodway St., S. Post Oak Lane to T. & N. O. Ry. underpass, HOUSTON, TEX. Frank Baldwin, c/o owner, Houston, Tex., Direc. P. Wks. Bids Sept. 23. CD 9/16.

BUILDINGS—LB & CA

▲ **G. Madsen Constr. Co.,** 2823 Lyndale Ave. S., Minneapolis, Minn., CA $1,429,900, general contract SENIOR HIGH SCHOOL, STILLWATER, MINN. Bd. Educ. Independent School Dist. No. 834, Stillwater, Minn. Bids Sept. 29. CD 9/11;

Peaslee Plumbing & Heating Co., Stillwater, Minn., CA $545,000, mechanical work Senior High School (Stillwater, Minn.).

G. Madsen Constr. Co., 2823 Lyndale Ave. S., Minneapolis, Minn., LB $387,700, (8 bidders), general contract 90,000 sq. ft. PLANT addn., WASECA, MINN. E. F. Johnson Co., Waseca, Minn. Bids Sept. 24. CD 9/4.

J. R. Seal Constr. Co., 5301 Brighton, Kansas City, Mo., LB $655,555, (5 bidders), 1 story, brick Carroll County MEMORIAL HOSPITAL, CARROLLTON, MO. Bd. Trustees, Carroll Co., Carrollton, Mo. Hewitt & Royer, 607 Westport Rd., Kansas City, Mo., archts. Bids Sept. 15.

▲ **Winn-Senter Constr. Co.,** 901 W. 43rd St., Kansas City, Mo., CA Est. $1,850,000, 20 story, 58x175 ft., 133 unit, rein.-con., brick Wornall Towers APARTMENT, incl. bsmnt. GARAGE, 221 W. 48th St. Terrace, KANSAS CITY, MO. Wornall Towers, Inc., c/o Edward W. Tanner & Assocs., archts., 310 Ward Parkway, Kansas City 12, Mo. Awarded Sept. 13. CD 9/22, under LB.

Timmons Constr. Co., 704 N. 72nd Ave., Omaha, Neb., LB $558,000, est. $550,000, S. W. ELEMENTARY SCHOOLS, BELLEVUE, NEB. Bellevue School Dist., Bellevue, Neb. Cecil A. Martin & Assoc., 503 Karback Block, Omaha, Neb., archts.

Rhodes Constr., Goodland, Kan., LB $418,000 general contract HIGH SCHOOL, SUBLETTE, KAN. Joint Rural High School Dist. 1 Haskell Co., Sublette, Kan. Bids Sept. 24. CD 9/16.

▲ **Gill Constr. Co.,** Republic Bldg., Oklahoma City, Okla., LB $1,032,000, 152 unit MOTOR HOTEL and DINING HALL, NE Expressway, OKLAHOMA CITY, OKLA. Ramanda Inn Corp., 3825 E. Van Buren, Phoenix, Ariz. Bids Sept. 15. CD 9/10.

▲ **E. A. Cowen,** 214 North Broadway, Shawnee, Okla., LB $1,129,000, JUNIOR HIGH SCHOOL and GYM., PONCA CITY, OKLA. Bd. Educ., Ponca City, Okla., Bids Sept. 21. CD 9/10.

Canterbury Village, c/o D. H. Canterbury and Jno. B. Brown, Developers-Builders, 1201 Almeda-Genoa Rds., Houston, Tex., Owner Builds, $439,700, 34 DWELLINGS; $418,000, 32 DWELLINGS, Section 2, Canterbury Subdivision, HOUSTON, TEX. CD 7/14.

Cantrell & Cantrell Constr. Co., Inc., 4853 Inker St., Houston, Tex., Owner Builds, $410,000, 10 brick DWELLINGS; $422,500, 15 DWELLINGS, Memorial Forest Subdivision, HOUSTON, TEX. CD 9/22.

▲ **Kern Investment Co.,** 2472 Bolsover St., Houston, Tex., Owner Builds, $573,150, 32 DUPLEXES; $541,500, 28 DUPLEXES, HOUSTON, TEX.

Leo Kern & Assocs., 3912 Roseneath St., Houston, Tex., Owner Builds, $435,000, Phase 2, 60 APARTMENT UNITS, South of Reed Rd., HOUSTON, TEX. CD 9/16.

▲ **King Constr. Co.,** 3818 Chaffin St., Houston, Tex., CA $434,150, 37 DWELLINGS; CA $423,500, 34 DWELLINGS; CA $406,950, 32 DWELLINGS, Freeway Forest Subdivision, HOUSTON, TEX. Bayou Homesites Rob. V. King, 9546 Meadowbriar St., Houston, Tex. Grand total $1,264,600. CD 9/3.

Modern Homes, Div. State-Wide Lumber Co., J. B. Belin, Sr., ores., 10106 Fleming St., Houston, Tex., Owner Builds, $425,000, 34 DWELLINGS; $410,000, 41 DWELLINGS, HOUSTON, TEX. CD 9/3.

(Continued on page 126)

RELOCATED TOWNS START RIGHT WITH D-O EQUIPPED SEWAGE PLANTS

Modern installations are provided for three communities moved by St. Lawrence Seaway project

Relocation of three Ontario communities, due to construction of dams for the St. Lawrence Seaway, made modern sewage treatment plants necessary. In each case, basic equipment was manufactured and supplied by our Canadian Associate, Dorr-Oliver-Long Ltd.

D-O is a foremost supplier of sewage and water treatment equipment to meet the needs of any type of plant. For details on the wide range of units available, write to Dorr-Oliver Inc., Stamford, Conn.

IROQUOIS, ONT.
Clarifier, 30' dia. x 12' SWD; Digester, 25' dia. x 18' SWD; Sludge Pump. Design population: 5,000. Design flow to plant: 600,000 GPD.

Consultants:
Proctor & Redfern, Toronto, Ontario.

MORRISBURG, ONT.
2 Clarifiers, primary type, 20' square x 7' SWD. Design population: 5,000. Design flow: average 600,000 GPD, Maximum 900,000 GPD.

Consultants:
James F. MacLaren & Associates, Toronto, Ontario.

LONG SAULT, ONT.
2 Clarifiers, primary and secondary, each 28' dia. x 8' 6" SWD. Design population: 3,000. Design flow: average 360,000 GPD, maximum 605,000 GPD.

Consultants:
Marshall, Macklin & Monaghan, Bon Mills, Ontario

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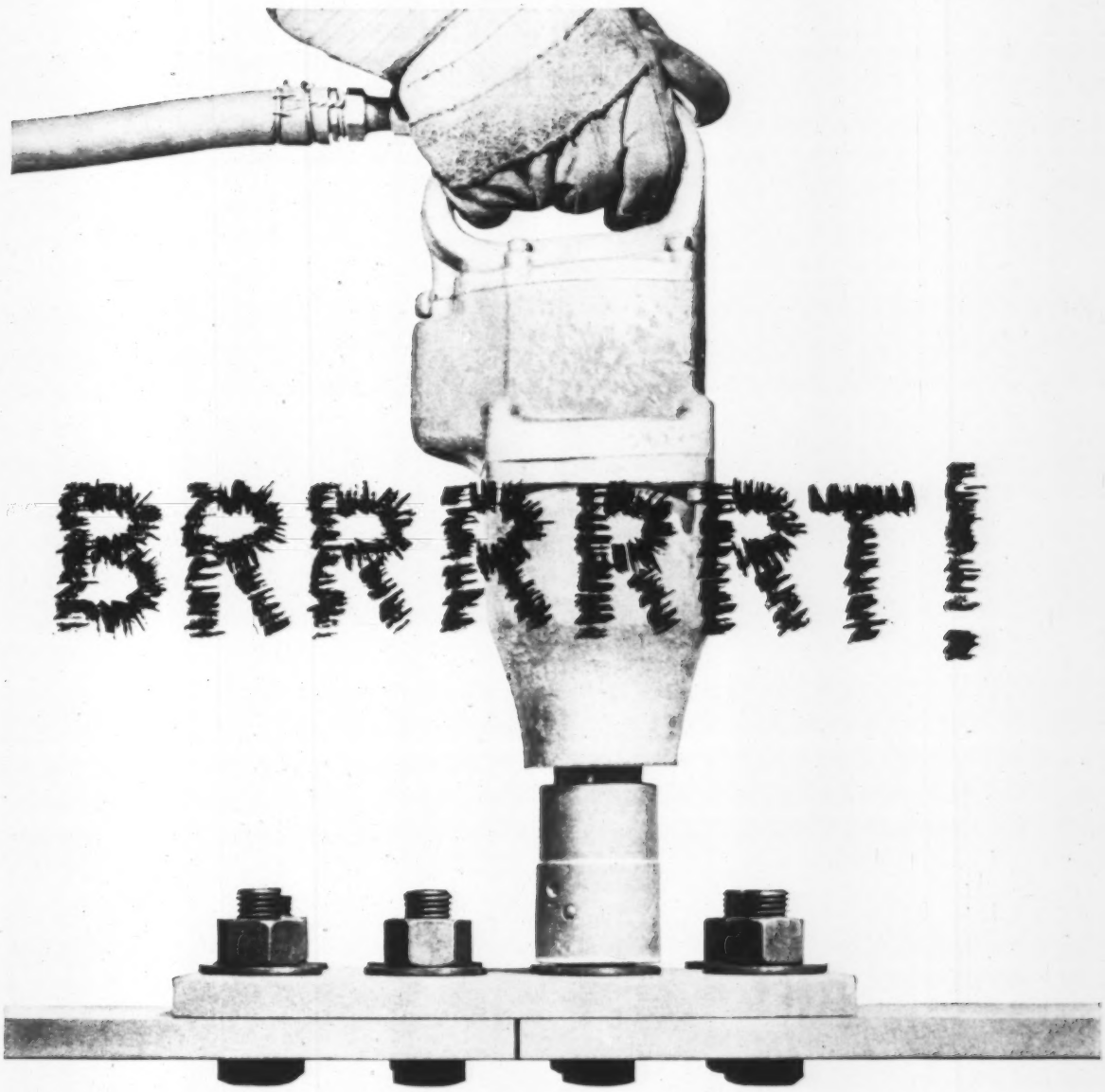

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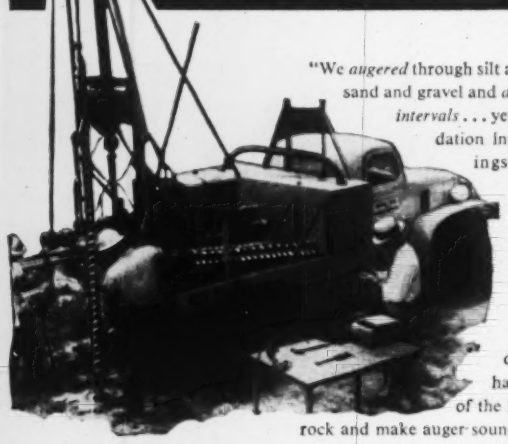

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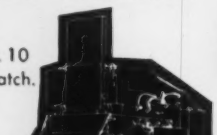
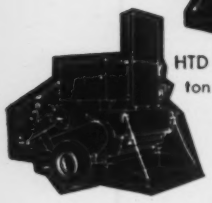
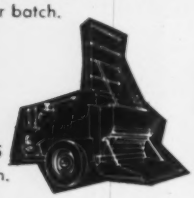


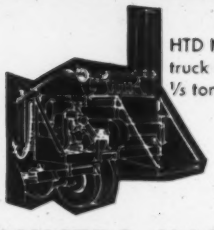
HTD No. 8 more than ⅓ ton per batch.



HTD No. 5
¼ ton per batch.



HTD No. 4-T truck mount . . . ⅓ ton per batch.



McCONNAUGHAY MIXERS, INC.
LAFAYETTE, INDIANA
National distributors: Asphalt Equipment Co. 3314 Cherry Lane, Fort Wayne, Indiana

(Continued from page 124)

P&M Builders, c/o P. M. Colquitt, 5537 Aspen St., Houston, Tex., Owner Builds, **$429,500**, 18 DWELLINGS; **$416,225**, 14 DWELLINGS, Maplewood Area, HOUSTON, TEX. CD 9/22.

▲ **Pacesetter Homes, Inc.**, 6535 Richwood St., Houston, Tex., Owner Builds, **$416,000**, 26 DWELLINGS; **$422,000**, 14 brick DWELLINGS; **$428,800**, 20 DWELLINGS, Meyerland Meadows Subdivision, HOUSTON, TEX. Grand total $1,266,800. CD 8/19.

Suburban Homes Realty & Lumber Co., 901 Little York Rd., Houston, Tex., Purchase and Hire, **$409,500**, 39 DWELLINGS, Chatwood and Fontaine Places Subdivisions, HOUSTON, TEX. CD 7/16.

Bellamah Imprvt. Co., 2810 Central Ave. S.E., Albuquerque, N. M., Owner Builds, **$461,825**, 35 DWELLINGS; **$480,000**, 30 DWELLINGS, LUBBOCK, TEX.

R. F. Beeler, Contractor, 8111 Easthaven St., Houston, Tex., Owner Builds, **$448,875**, 41 DWELLINGS, Beverly Hills Subdivision; **$410,000**, 34 DWELLINGS, Bennett Estates Subdivision, PASADENA, TEX. CD 9/8.

Louis J. Hexter & Assocs., 1312 Main St., Dallas, Tex., Owner Builds, **$439,150**, 34 DWELLINGS; **$413,500**, 28 DWELLINGS, off Arapaho Rd., RICHARDSON, TEX. CD 9/14.

Solomon Fogiel, 255 Rampart St., Apt. 1, San Antonio, Tex., CA Approx. **$400,000**, two 68 APARTMENT UNITS, SAN ANTONIO, TEX. Stardust Apartments, c/o 255 Rampart St., San Antonio, Tex. CD 10/2.

Golden West Homes, Inc., Billy Bedell, 170 Del Ray St., San Antonio, Tex., Owner Builds, **$411,250**, 28 masonry frame DWELLINGS, off Jackson-Keller Rds., SAN ANTONIO, TEX. CD 9/25.

▲ **Joe W. Joeris**, Box 2625, San Antonio 6, Tex., LB **$1,110,000**, est. $535,000, (9 bidders), 2 story, 50,000 sq. ft., brick exterior CHEMISTRY-GEOLOGY, SAN ANTONIO, TEX. San Antonio College, 1300 San Pedro Ave., San Antonio, Tex. Bids Sept. 30. CD 9/16.

▲ **Bill Martin Contractor**, Texas City, Tex., CA **$1,000,000**, 1 story, masonry, frame, brick walls, concrete steel frame SHOPPING CENTER, Texas Ave. and 27th St., TEXAS CITY, TEX. Kevdale Corp., c/o P. Herbert Caldwell, archt., 4104 Weslow St., Houston, Tex. CD 10/6.

▲ **Vancouver Plywood Co.**, 1010 Washington St., Vancouver, Wash., Owner Builds, **$2,250,000**, PLYWOOD MFG. PLANT, MISSOULA, MONT. CD 9/3.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Angeles—BA 10/23—Los Angeles County Flood Control Dist., 2250 Alcazar St., one mi. 120- to 277-in. and 1,350 ft. 36- to 15-in. rein.-con. Storm Drain Bond Issue Proj. 583 Morengo Ave., South Pasadena. $500,000. Plans deposit $2.60. CD 11/10.

† **Idaho**—BA 10/29—Bureau Reclamation, Dpt. Interior, Office of Constr. Engr., Rupert; 1 story, 38 x 62 ft., brick veneer office, 11th and E Sts., Rupert, North Side Pumping Div., Minidoka Proj., Specs. No. 100C-385. CD 9/30, under Earthwork, etc.

† **Wash., Spokane**—AIR BASE IMPRVS.—BA 10/29—U. S. Eng., 1519 South Alaskan Way, Seattle, Zone 4, water supply sys., complexes F through I, WS 107A-1 Operational Base, Fairchild Air Force Base, IFB ENG-45-108-60-388. CD 4/21/58.

† **Washington**—BA 10/30—Chelan Co. Public Utility Dist., 327 N. Wenatchee Ave., Wenatchee, bank erosion protection works on east bank of Columbia River at Rocky Reach Dam, Rocky Reach Project. Stone & Webster Eng. Corp., 49 Federal St., Boston, Mass., engrs. CD 2/2/55.

California and Nevada—BA 11/3—Metropolitan Water Dist., 306 W. 3rd St., Los Angeles, Calif., 230 KV transmission line for Colorado River Aqueduct 84 mi. single circuit 3 phase power lines Hoover Dam, Nev. to Needles, Calif. Spec. 570. $500,000.

† **Washington**—BA 11/3—U. S. Eng., City-County Airport, Walla Walla, grading, relocation, U. P. railroad, Sect. II, Ice Harbor Lock and Dam, CIVENG-45-164-60-5. Extended date. CD 9/10.

† **Washington**—BA 11/4—U. S. Eng., City-County Air-Port, Walla Walla, main unit switchboards and appurtenances, for Ice Harbor Dam, Pasco, CIVENG-45-164-60-13. CD 9/29.

Utah, Brigham City—BA 11/5—Brigham City Corp., Town Hall, power house, turbine and generator, transmission lines, mouth of Box Elder Canyon, $156,000. Plans deposit $20, Tudor Eng. Co., 595 Mission St., San Francisco, Calif., engrs.; furnish material and labor for water sys. from Box Elder Canyon 2,500 ft. 12- to 30-in. steel pipe and 4,200 lin. ft. 30 in. concrete pipe, $80,000, Plans deposit $20. Nielsen, Reeves & Maxwell, 275 E. 4425 S., Ogden, engrs. CD 6/24.

† **Arizona and Nevada**—BA 11/17—Bureau Reclamation, Dpt. Interior, Boulder City, Nev., equipment installation and transformer circuit reconstr. for Unit N-8 Hoover Powerplant and switchyards, Boulder Canyon Proj., Spec. DS 5240. CD 9/30/58.

BUILDINGS—BA

▲ **Calif., Oakland**—HALL OF JUSTICE—BA 10/29—City, City Hall, plans by John Papadakis, c/o owner-city archt., 2nd phase, installing electrical, plumbing, heating, ventilating equipment, interior and exterior work for Hall of Justice $3,000,000. CD 1/27/47.

(Continued on page 130)

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The Image of CF&I stands for the top performance records of all CF&I steel products. For instance, take one of these products—CF&I-Wickwire Rope.

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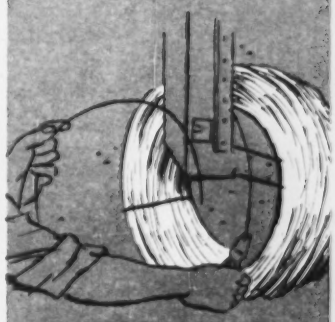

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FIRST NAME FOR
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There are Macks for every construction job. Here are 35 of Campanella & Cardi's 100-Mack fleet ready to tackle a new assignment.

CAMPANELLA & CARD

(Continued from page 126)

▲ **Calif., San Francisco**—HOUSING—BA 11/4—City and San Francisco County Housing Auth., 440 Turk St., two 12 story and one 11 story, concrete Ping Yuen Annex Low-Rent Housing, Broadway, Cordelia and Pacific Sts., incl. 194 dwelling units. $3,200,000. John S. Bolles 14 Gold St. archt. Chin & Hensolt, 555 Sutter St., engrs. CD 4/3/59.

▲† **Calif., Sacramento**—HOUSING—BA On Or About 11/12—Base Procurement Office, Bldg. 3510, Chapel Annex, Mather Air Force Base, armed services housing, consisting of 230 family housing units Mather Air Force Base, Inv. Nr 04-612-60-14. Plans deposit $200. CD 4/28.

BUILDINGS—SLC

▲ **Calif., Los Angeles**—OFFICE, etc.—Pacific Indemnity Co., 3450 Wilshire Blvd., soon lets contract 16 story, steel frame, concrete office and parking bldg. Wilshire Blvd. and Vermont Ave. $6,500,000-$7,000,000. Claud Beelman & Assocs., 7421 Beverly Blvd., archts.-engrs.

HEAVY CONSTRUCTION—LB & CA

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau, Bids opened 9/29.

Pacific Alaska Co., Box 676, Anchorage, Alaska, LB $475,002, est. $420,393 (11 bidders), clearing, grubbing, grading, drainage 8.7 mi. Hope Hy. Seward-Anchorage Hy. to Turnagain Arm, Proj. FH-D3, BS. CD 9/11.

Twin Butte Contractors, Inc., Tempe, Ariz., CA $211,-162, installing sanitary sewers bounded by 21 St. and 35 Ave. from Roosevelt to McDowell and between 32 and 35 from McDowell to Encanto Blvd., PHOENIX, ARIZ. City, City Hall, Phoenix, Ariz. Awarded Sept. 29. CD 5/28/57.

† **George W. Lewis Co.**, Kennewick, Wash., CA $118,150, repair Chandler canal, Sta. 335 plus 43 to 349 plus 18, Yakima project, 100C-382, WASHINGTON. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. CD 9/30/58.

General Constr. Co., 3840 Iowa St., Seattle, Wash., CA $377,104, (3 bidders), dredge pioneer channel for 3,800 ft. extension of Hylebos Waterway, TACOMA, WASH. Port of Tacoma, 801 Portacoma Rd., Tacoma, Wash. Bids Sept. 30. CD 9/16.

† **Keystone Constr. Co., Inc., & Assocs.**, Prineville, Ore., LB $164,621 (16 bidders), earthwork, structures, surf. for relocation Oregon State Highway No. 27, Prineville Reservoir, Crooked River Proj., Spec. DC 5232, OREGON. Bureau Reclamation, Dpt. Interior, Prineville, Ore. Bids Oct. 1. CD 8/25.

C. J. Montag & Sons, 7805 N E Halsey St., Portland, Ore., LB $128,481, (8 bidders), Mocks Bottom industrial sewer, PORTLAND, ORE. City, City Hall, Portland, Ore. Bids Sept. 28. CD 2/1/56.

† **J. R. Armstrong Constr. Co.**, P.O. Box 216, El Cerrito, Calif., LB $304,025 (13 bidders), flood control Proj. Rheem Creek, Channel imprvs., bridges, culverts, flood gates, chain fencing, near San Pablo, Contra Costa Co., ENG-60-3, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Sept. 10. CD 8/12.

† **J. R. Cantrall Constr. Co.**, 9510 Rush St., El Monte, Calif. CA $199,779 (17 bidders), radar tower, Norad Control Center, San Pedro Hill, ENG-04-153.50-11, SAN PEDRO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Sept. 29. CD 9/11.

Leo Weiler Co., 10616 Stanford Ave., Garden Grove, Calif., CA $143,253, (14 bidders), Miller Holder Trunk Sewer, La Habra, Contr. 3-4C, SANTA ANA, CALIF. Orange County Sanitation Dist. No. 3, 1104 W. 8th St., Santa Ana, Calif. Bids Sept. 9. CD 8/15/58.

BUILDINGS—LB & CA

▲ **Burgess Constr. Co.**, 394 Hamilton Ave., Hamilton Acres, Fairbanks, Alaska, and **Reed & Martin, Inc.**, 653 10th St., Fairbanks, Alaska, CA $1,281,225, ELEMENTARY SCHOOL, FAIRBANKS, ALASKA. School Bd. Fairbanks, Alaska. Gray, Rogers, Graham & Osborne, 255 College Rd., Fairbanks, Alaska, archts. Bids Sept. 22.

▲ **Paul B. Emerick Co.**, 450 Southeast 174 Ave., Portland, Ore., LB $1,152,000, (14 bidders) general contract HIGH SCHOOL, OLYMPIA, WASH. School Dist., No. 1, 116 North Columbia St., Olympia, Wash. Bids Sept. 23. CD 8/24.

W. C. Sivers Co., 5000 S E 25 Ave., Portland, Ore., CA $133,969, (6 bidders), FACTORY, BEAVERTON, ORE. Mears Electric Controls Co., Beaverton, Ore. Johnston & Koch, Concord Bldg., Portland, Ore. archts. Awarded Sept. 29.

▲ **Michael C. Bellobuono & Sons**, 18 Bellevue Terrace, Cromwell, Conn., CA $1,080,000, 54 HOUSES "Bel Aire Estates," Bartlett Rd., PORTLAND, ORE. Bel Aire Estates, Inc., Bartlett Rd., Portland, Ore. Awarded Oct. 2.

Pacific Carbide & Alloys Co., N. Columbia Blvd. and Hurst, Portland, Ore., Owner Builds, $500,000, CHEMICAL PLANT, PORTLAND, ORE. Awarded Sept. 28.

† **E. Carl Schiewe**, 1024 N E Davis St., Portland, Ore., LB $887,000, (5 bidders), HOSPITAL alterations, PORTLAND, ORE. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Sept. 29. CD 8/6.

▲ **Dimwiddie Constr. Co.**, Crocker Bldg., San Francisco, Calif., CA Est. $2,000,000, 5 story MANUFACTURING and OFFICE annex, 120,000 sq. ft. WAREHOUSE, EXPORT LOADING STRUCTURE, BERKELEY, CALIF. Colgate-Palmolive Co., 300 Park Ave., New York, N. Y. George Miehls, 345 New Center Bldg., Detroit, Mich., archt.-engr.

▲ **Compton Union High School Dist.**, 417 W. Alondra Blvd., Compton, Calif., rejected bids Sept. 28, CENTENNIAL HIGH SCHOOL alterations, additions, COMPTON, CALIF. CD 9/17.

Carl W. Johnson, 335 N. Victory Blvd., Burbank, Calif., LB $204,475 (15 bidders), 200x60 ft. precast tilt-up concrete GARAGE and MACHINE SHOP, Public Service Corporate Yard, GLENDALE, CALIF. City, 613 E. Broadway, Glendale, Calif. Bids Sept. 29. CD 4/16.

▲ **Heers Bros., Inc.**, Box 2187, Riverside, Calif. Owner Builds, $1,775,104, 120 DWELLINGS, CHARLENE, Pilot, Tiffin, Mallard Sts., SAN DIEGO, CALIF.

S. J. Amoroso Constr. Co., 2100 Oakdale Ave., San Francisco, Calif., CA $636,700, general constr. 65,000 sq. ft. rein.-con. GYMNASIUM addns., San Francisco State College, W. O. 4005GC-51, SAN FRANCISCO, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Sept. 22, awarded Sept. 29. CD 9/29, under LB.

Maino Constr. Co., 2238 S. Broad St., San Luis Obispo, Calif., LB $961,424 (3 bidders), general constr. 2 story, 55,000 sq. ft. air-conditioning, etc., rein.-con. LITTLE THEATER-MUSIC BLDG., California State Polytechnic State College, W. O. 4160GC-16, SAN LUIS OBISPO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Sept. 30. CD 8/21.

Wm. A. Drennan Constr. Co., 1325 Castaic, Box 487, Oildale, Calif., LB $748,000, masonry MUSIC, SPEECH ARTS BLDG., Ventura College, VENTURA, CALIF. Ventura Union High School Dist., 295 S. Arcade Dr., Ventura, Calif. Harold E. Burket, 740 E. Main St., Ventura, Calif., archts. Bids Sept. 23. CD 2/13/58.

Richard Lawyer Constr. Co., Box 1065, Arcadia, Calif., CA $736,025, 59 stucco DWELLINGS, Tract 16457, WEST COVINA, CALIF. Olson Lumber Co., Inc., Box 1065, Arcadia, Calif.

▲ **Carlton Builders**, 246 S. Robertson Blvd., Beverly Hills, Calif., CA $1,237,600, 91 stucco, concrete block frame DWELLINGS, WOODLAND HILLS, CALIF. Truro Bldg. Co., 246 S. Robertson Blvd., Los Angeles, Calif. Raymond Dean Conwell & Assoc., 919 S. Garfield Ave., Los Angeles, Calif., archts.

CANADA

HEAVY CONSTRUCTION—BA

† **Newfoundland, Argentia**—ACCESS ROAD—BA 10/20—Area P. Wks. Office, New York Room 633, Federal Office Bldg., 90 Church St., New York 7, N. Y., U. S. A. access road to oceanographic station, U. S. Naval Station, NBy 26743, Spec. 26743/59. $100,-000-$250,000. CD 9/28.

▲ **Newfoundland, St. Johns**—HARBOR MODERNIZATION—BA 11/18—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., modernization program at harbor. $13,-000,000. CD 1/30.

BUILDINGS—SLC

Alta., Calgary—CAR PARK—Calgary Downtown Parking Corp., 3rd floor, 803 Centre St., S., soon lets contract car park, N.W. corner 9th Ave. and Centre St. $730,000. L. E. Baker of Strong, Lamb & Nelson, 504-4th St. S. E., archts.-engrs. CD 6/4/58.

▲ **Ont., Hamilton**—RESIDENCE—McMaster University, Hamilton, soon lets contract 4 story, Y-shaped men's residence, $1,450,000. Wm. R. Souter & Assocs., 36 James St. S., archts. CD 7/20.

Ont., Windsor—BRANCH BANK. The Royal Bank of Canada, 360 St. James St. W., Montreal, Que., soon lets contract Branch Bank, Pitt St. $500,000. CD 2/3.

▲ **Que., Montreal** — HOSPITAL — LaSalle General Hospital, c/o Dr. M. Lacharite, 7667 LaSalle Blvd. soon lets contract 100 bed hospital, Champlain Blvd. $1,500,000. Roux & Morin, 0119 rue Clement, LaSalle, Montreal, archts. Gagnon & Horvath, 332 Craig St. E., engrs. CD 10/3/58.

HEAVY CONSTRUCTION—LB & CA

MANITOBA—Manitoba Dpt. P. Wks., Legislative Bldg., Winnipeg.

Man.—Brandt Constr. Ltd., 306 N. 12 Hy., Steinbach, Man., LB $175,120, surf. Provincial Trunk Hy. No. 12, from Provincial Trunk Hy. No. 1, East-Steinbach.

Man.—J. J. Jackson, 42 Harmon St., Winnipeg, Man., LB $106,176, grading Snowflake Rd. from south boundary of Manitoba, north, Gladstone.

Man.—Harris Constr. Co. Ltd., 1350 Wall St., Winnipeg, Man., LB $91,455, concrete pavement Provincial Trunk Hy. No. 9 from Bergen Cut-off Glen Ave.

Home Petroleum Constr. Ltd., 528 Broad St., Regina, Sask., LB $159,399, (14 bidders), bulk fuel facilities Royal Canadian Air Force Station, RIVERS, MAN. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Sept. 24. CD 9/9.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto, **McNamara Rd. Constr. Ltd.**, 42 Industrial St., Leaside, Toronto, Ont., CA $1,291,499, grading, culverts, gran. base 9.87 mi. Hy. 11, Missinaibi River (Mattice) westerly. (Contr. 59-201). CD 9/15, under LB.

▲ **Canadian Bridge Co. Ltd.**, Walkerville, Ont. LB $3,174,948, (5 bidders), superstructure and deck, Cornwall North Channel Bridge, International Rapids Section, St. Lawrence Seaway, Cornwall, ONTARIO. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Sept. 29. CD 9/10.

Speckert-Morris Ltd., Box 329, Markham, Ont., CA $516,380, Lakehead Harbor Imprvs., PORT ARTHUR, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. CD 9/3, under LB.

Malvern Constr. Co. Ltd., 490 Dawes Rd., Toronto, Ont., CA $190,807, Approx. 6,100 lin. ft. 10 in. sanitary sewer; 6,000 lin. ft. 10- to 36-in storm sewer, RICHMOND HILL, ONT. Town, Municipal Offices, Richmond Hill, Ont. Bids Sept. 17. CD 9/9.

▲ **Jackson-Lewis Co. Ltd.**, 10 St. Mary St., Toronto, Ont., CA $1,750,000, third grandstand addn., Old Woodbine Racetrack, Queen St. E. and Woodbine Ave., TORONTO, ONT. Ontario Jockey Club Ltd., Box 160, Downsview, Ont. Bids Sept. 24. CD 9/14.

Komo Constr. Ltd., 1500 St. Vallier W., Quebec City, Que., CA Est. $600,000, road work along Manicouagan River, Chutes-aux-Outardes, QUEBEC. Hydro Power Comm. of Quebec, 107 Craig W., Montreal, Que.

Desourdy Freres Ltee., Montee St. Luc, St. Johns, Que., LB $545,434, (11 bidders), 26 bed structural steel hospital, Royal Canadian Air Force Station, ST. JOHNS, QUE. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Sept. 24. CD 9/9.

BUILDINGS—LB & CA

▲ **Esam Constr. Co. Ltd.**, 51 Irwin St., London, Ont. Owner Builds, $1,500,000, 18 store SHOPPING CENTER, Oxford St. W., LONDON, ONT. CD 10/13/58.

Gilvesy Constr. Ltd., Box 370, Tillsonburg, Ont., CA est. $200,000. (4 bidders), 306x112 ft. WAREHOUSE and FERTILIZER PLANT, TILLSONBURG, ONT. United Co-operative of Ontario, 35 Oak St., Weston, Ont. Dunlop, Wardell, Matsui & Aitken, 3341A Bloor St. W., Toronto, Ont., archts.-engrs. Awarded Sept. 25.

▲ **Thomas Fuller Constr. Co. Ltd.**, 199 Richmond Rd., Ottawa, Ont. LB $1,509,309, (14 bidders), rein.-con. structural steel, brick, Woodroffe HIGH SCHOOL, OTTAWA, ONT. The Collegiate Institute Bd. of Ottawa, 180 Bay St., Ottawa, Ont. Bids Sept. 15. CD 8/27.

▲ **Varamae Constr. Co. Ltd.**, 250 Merton St., Toronto, Ont., CA $1,118,000, 3 story, concrete frame Williamson Road SENIOR PUBLIC SCHOOL, TORONTO, ONT. Toronto Bd. Educ., 155 College St., Toronto, Ont. Awarded Sept. 25. CD 9/29, under LB.

▲ **Laurent Simard**, Port Alfred, Que., CA Est. $1,000,-000, HOUSING, LA TUQUE, QUE. Joffre Pilon, La Tuque, Que.

Douglas Bremner Contractors & Builders Ltd., 9965 Monkland Ave., Montreal, Que., CA est. $750,000, structural steel, brick CHURCH, SCHOOL AND COMMUNITY CENTER, Cote St. Catherine Rd., MONTREAL, QUE. Hellenic Canadian Community of Montreal, 6 Sherbrooke St. W., Montreal, Que. Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud & Sise, 1010 St. Catherine St. W., Montreal, Que., archts. Adjelelian & Cavadias, 77 Metcalfe St., Ottawa, Ont. engrs. CD 6/24/57.

Robert Miller Constr. Co. Ltd., 2100 Guy St., Montreal, Que., CA $233,500, 1 story, 260 ft. x 47 ft., steel frame, concrete flat metal roof RAIL DIESEL CAR SERVICING SHOP, Glen Yards, MONTREAL, QUE. Canadian Pacific Railway Co., 581 5th Ave., New York 17, N. Y. CD 3/15/44, under Unclassified.

▲ **Poole Constr. Co. Ltd.**, Hamilton and 8th Ave., Regina, Sask., CA $1,579,856, (5 bidders), rein.-con., limestone, granite base air-conditioned COURTHOUSE, REGINA, SASK. Dpt. P. Wks., Legislative Bldg., Regina, Sask. Angus, Butler & Assocs., Ltd., 107 Brent Bldg., Regina, Sask., engrs. Bids Sept. 22, awarded Sept. 25. CD 9/2.

Desourdy Constr. Ltd., 143 North St., Cowansville, Que., CA Est. $150,000, part 1 story and part 2 story, 140x200 ft., structural steel frame, concrete block, brick "VisQueen" POLYETHYLENE FILM PLANT, COWANSVILLE, QUE. Visking Co., Div. Union Carbide Canada Ltd., 2221 Yonge St., Toronto, Ont. Bids Sept. 17, awarded Sept. 25. CD 9/11.

J. H. Dupuis Ltee., 3333 Viau St., Montreal, Que. CA $435,000, (10 bidders), 4 story, 80x80 ft., rein.-con., brick, cut stone DIAL EXCHANGE BLDG. EXTEN., Cote des Neiges Rd. and Kent Ave., MONTREAL, QUE. Bell Telephone Co. of Canada, 1050 Beaver Hall Hill, Montreal, Que. Bids Sept. 16, awarded Sept. 25. CD 8/31.

▲ **Magil Constr. Ltd.**, 410 Gratton St., St. Laurent, Que., CA $1,183,950, (12 bidders), SUPERMARKET AND SHOPPING CENTER, Hy. 11 at Hy. 29, ROSEMERE, QUE. Ivanhoe Corp., c/o Steinberg's Ltd., 5400 Hochelaga St., Montreal, Que. Max W. Roth, 1015 Sherbrooke St. W., Montreal, Que., archt. for shopping center. F. A. Dawson, 4631 Sherbrooke St. W., Montreal, Que., archt. for supermarket.

Tower Co. Ltd., 2055 Mackay St., Montreal, Que. CA Est. $150,000, three 5,000 cement barrel capacity SILOS, Seven Island Wharf, SEVEN ISLANDS, QUE. Ironland Concrete Supplies Ltd., Seven Islands, Que. Murray Markanen, Seven Islands, Que., engr.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Ormas S. A.**, Suipacha 552, Buenos Aires, Argentina CA Est. $11,000,000, 66,000 kw POWER PLANT, NECOCHEA, ARGENTINA. Direccion de La Energia La Plata, Prov. de Bs. As., Necochea, Argentina. Dimas S. A., Suipacha 552, Buenos Aires, Argentina engr.

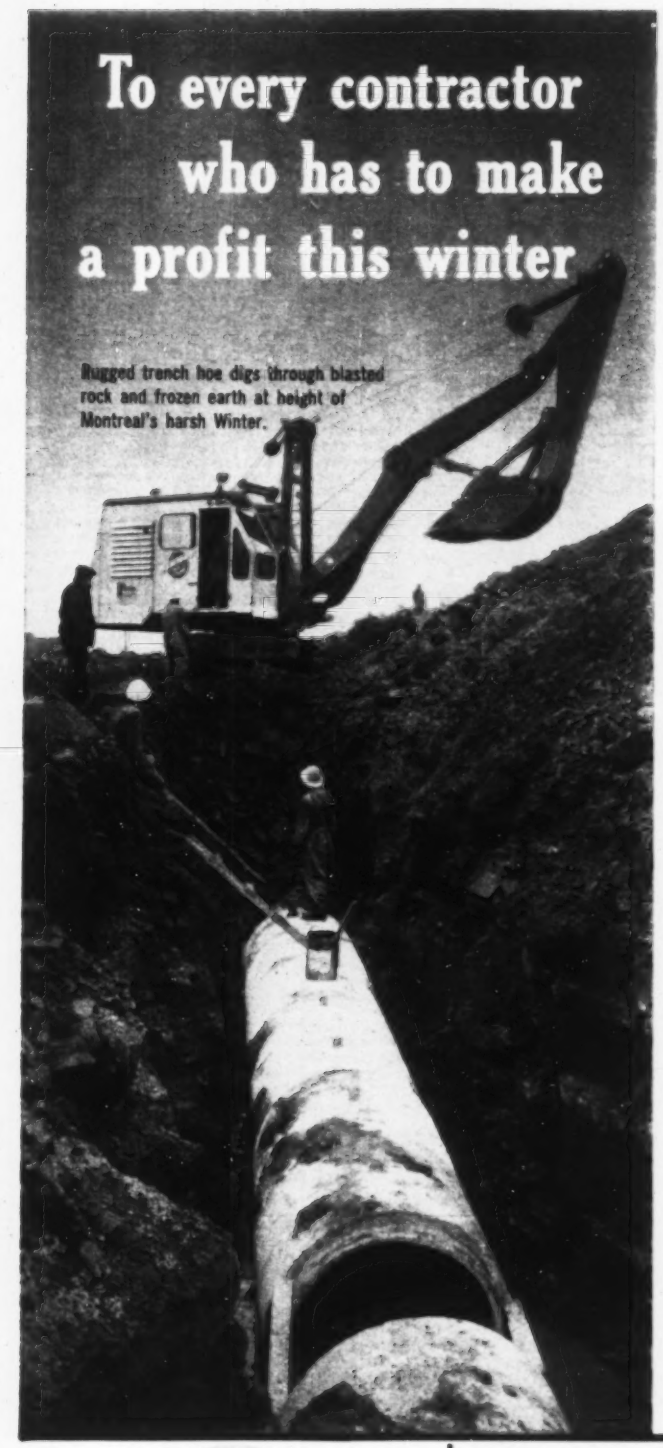
FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ **Iberduero Co.**, Arlaban, Madrid, Spain, CA $12,000,-000, design and construct reservoir and power station, BADAJOZ, SPAIN. Iberduero Electric Co., Arlaban, Madrid, Spain.

(Continued on page 132)

To every contractor who has to make a profit this winter



Rugged trench hoe digs through blasted rock and frozen earth at height of Montreal's harsh Winter.

AT MINUS 25 degrees, Manitowoc 1¼-yd. hoe trenches 200 feet each 10-hour shift in frozen, blasted rock

Despite severe temperatures hovering between 20° to 25° below zero last winter, this 1¼-yd. Manitowoc Trench Hoe averaged 200' of dynamite-blasted rock and frozen earth each shift for Civil Construction, Inc. of Montreal, Quebec.

ROCK ALL THE WAY

The job involved two major sewer projects for the Corporation de Montreal Metropolitan (Metropolitan Commission for Public Works) covering over 22,000 feet of sewer trench budgeted at a total cost of $355,000. Each trench was excavated 10 to 12 feet deep, and 8 feet wide. Every foot of the job was in quarry rock that had to be blasted before the Manitowoc could move in to work.

NO REPAIRS

Taking the severe weather and tough digging in stride, the hoe put out top yardage that would have been good even under ideal working conditions — and with minimum service and attention. On this point Mr. Paul F. Tremblay, Vice President of Civil Construction, Inc., said, "We have spent almost nothing on repairs or maintenance for our Manitowoc hoe since acquiring it last Winter. At the same time, we spent over $28,000 in repairs and maintenance on our rigs of other makes. Yes, we are confident that this trench hoe will more than do its part in giving us profitable operation with a minimum of maintenance and repair costs."

Stabilize *your* profit picture this Winter with an excavator-crane that can keep the output "hot" even at minus zero temperatures. Get more information NOW about the big-yardage Manitowoc that best suits your business.

Manitowoc

SHOVELS 1¼-6 YDS. • CRANES 25-125 TONS

MANITOWOC ENGINEERING CORP. PASTE ON POSTAL CARD
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN Dept. ENR

Send complete information on:
- ☐ 1¼-yd. ☐ 1½-yd. ☐ 2-yd.
- ☐ 2½-yd. ☐ 3-yd. Trench Hoe
- ☐ Other excavators to 6-yds.
- ☐ Cranes from 25 tons to 125 tons

NAME
TITLE
COMPANY
STREET
CITY STATE

(Continued from page 130)

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

† **Cuba, Guantanamo Bay**—WATER SYS.—BA 10/29—Area P. Wks. Office, Caribbean, Admin. Bldg. Room 115, U. S. Naval Station, San Juan, Puerto Rico, water sys. imprvs. U. S. Naval Base, NBy 17939, Spec. 17939/59. $500,000-$1,000,000. CD 9/29.

† **Thailand**—Bids Asked—Royal Irrigation, Dpt. Kingdom of Thailand, Bangkok, furnishing, transporting, handling, constr. and erecting of 230 KV single circuit and double circuit transmission lines in and in vicinity of Bangkok for 230 KV transmission Sys. Yanhee Multipurpose Proj.; Bids No. YSC-3-1. Plans deposit $10. Thai Liaison Engineer, c/o Engineering Consultants, Inc., 1940 West Mississippi Ave., Denver, 23, Colo. U.S.A. engr. CD 1/23/58.

HEAVY CONSTRUCTION—LB & CA

† **Messrs. Allgemeine Electricitats**, Gesellschaft, Germany, CA furnishing, delivering clf, Bangkok Wharf for the Yanhee Multi-Purpose Proj., 2 vertical-shaft, alternating current generators, 73,684 kva, 95 percent power factor, 150 rpm, 13,000 volt, 3 phase, 50 cycle, incl. accessories and spare parts, THAILAND. Royal Irrigation Dpt. of Kingdom of Thailand, Bangkok, Thailand. Thai Liaison Engrs., c/o Engrg. Consultants, Inc., 1940 W. Mississippi Ave., Denver 23, Colo., U.S.A., engrs. Bids Apr 28. CD 2/24.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Sacramento**—City, City Hall, 9th and I Sts., $25,000,000 revenue bond issue election Nov. 3, water sys. imprvs. in city, incl. $10,500,000 filtration plant, 32 mi. trunk lines, booster pumping station and water softening plant. CD 11/12/45.

▲ **Tex., Houston**—Memorial Village Water Supply Corp., 958 Carbonville St., water sys. $1,000,000. Wendell Beard, 308 Rusk Bldg., consult. engr. CD 4/30, under Texas.

▲ **Ontario**—Metropolitan Toronto & Region Conservation Auth., Woodbridge, dam and reservoir, Humber River, Clairville, western edge of Etobicoke Twp. $1,086,000. James F. MacLaren Assocs., Confederation Life Bldg., 321 Bloor St. E., Toronto, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **La., Shreveport**—City, City Hall, bond election Oct. 20. Item No. 1a, sanitary sewers, $650,000; Item No. 3, sewers $1,200,000; Item No. 5, storm drainage, $1,500,000; Item No. 9, incinerator, $400,000.

▲ **Mass., Fall River**—City, Sewer Dpt., City Hall, intercepting sewers and branch sewers, Quequechan River, $1,338,000. Hayden, Harding & Buchanan, 1140 Soldiers Field Rd., Brighton, engrs. Constr. 1960. CD 8/11/58.

▲ **Mass., Swampscott**—Refuse Disposal Comn., Swampscott, incinerator. $2,200,000 site not selected. Fay, Spofford & Thorndike, Inc., 14 Beacon St., Boston, engr. Constr. 1960.

▲ **N. J., Linden**—Incinerator Auth. of Borough of Roselle and Cities of Rahway and Linden, Roselle, incinerator at Linden for joint municipalities, $1,735,000. Alexander Potter Assoc., 50 Church St., New York, N. Y., consult. engr. CD 9/7/57.

▲ **N. Y., Bellerose**—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, two storm sewer projects costing $1,149,000 and $507,700. To go ahead 1960-1961.

▲ **N. Y., Hamilton Beach**—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, sanitary sewerage sys. $1,352,500. To go ahead 1960-1961.

▲ **O., Columbus**—City, City Hall, Southeast Columbus Sewage Treatment Works, $10,000,000. H. G. Dill Co., 260¾ N. High St., consult. engr.

▲ **O., Mason**—Village, Village Hall, bond election Nov. 3, sewage disposal plant, $1,600,000. Markey & Hasselbring, 212 Broadway, Lebanon, and Russell Harvey Assocs., 1666 1st St., Columbus, consult. engrs.

BRIDGES

Calif., Indio—City, City Hall, $350,000 bond election Nov. 4, four lane overpass Oasis St. at U. S. Hy. 99. $923,040. Boyle Engineering, 3913 Ohio St., San Diego, consult. engrs.

▲† **Delaware and Maryland**—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., Summit Bridge, Indland Waterway, Delaware River to Chesapeake Bay. $3,013,000 appropriated. CD 12/31/52, under Earthwork, etc.

STREETS AND ROADS

▲† **ALASKA**—Bureau Public Roads, Federal Bldg., Juneau,
135 mi. Willow-Summit Highway from Anchorage to Mount McKinley, $25,000,000 (no appropriation) Tippetts-Abbett-McCarthy-Stratton, 375 Park Ave., New York 22, N. Y., consult. engrs., making preliminary surveys and engineering reports.

▲ **CONNECTICUT**—State Hy. Dpt., 24 Wolcott Hill Road, Wethersfield.

East Hartford, Glastonbury and Manchester—connector for Interstate Highways 491, 84 and Connecticut Rte. 6, from Putnam Memorial Bridge, Glastonbury, to Wilbur Cross Highway, Rte. 84, in Manchester, $12,000,000.

▲ **Va., Danville**—City, City Hall, 3 lane highway Rte. 29 from W. Main St. to corporate limits approx. 2 mi. $1,000,000. David Bowling, Dpt. Public Works, city engr.

EARTHWORK, WATERWAYS

▲† **Alabama and Georgia**—U. S. Eng., 2301 Grant St., Mobile, Ala., Walter F. George, (Fort Gaines) Lock and Dam, Chahachooch River, $14,528,000 appropriated. CD 10/17/55.

† **Alabama and Georgia**—U. S. Eng., 2301 Grant St., Mobile, Ala., Columbia Lock and Dam, Chattahoochee River, $975,000 appropriated.

▲† **Alabama**—U. S. Eng., P. O. Box 1169, Mobile, Ala., Jackson Lock and Dam, Tombigee River, $7,800,000 appropriated.

▲† **Arizona**—U. S. Eng., 751 S. Figueroa, Los Angeles, Calif., Alamo Reservoir, Bill Williams River. $9,000,000 ($63,000 appropriated for planning).

▲† **Arizona**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Painted Rock Reservoir, Gila River. $5,042,000 appropriated. CD 9/23/58.

▲† **Arkansas and Oklahoma**—U. S. Eng., P. O. Box 867, Little Rock, emergency bank stabilization Arkansas River and tributaries, $4,875,000 appropriated. CD 12/24/43.

▲† **Arkansas**—U. S. Eng., 300 Broadway, Little Rock, Dardanelle Lock and Dam, Arkansas River, $3,315,000 appropriated.

▲† **Arkansas**—U. S. Eng., P. O. Box 867, Little Rock, Bull Shoals Reservoir, Units 5 and 6 addns., White River. $1,700,000 appropriated. CD 11/13/51.

▲† **Arkansas**—U. S. Eng., P. O. Box 867, Little Rock, Greers Ferry Reservoir, Little Red River, $10,852,000 appropriated.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, dredging Sacramento River deepwater ship channel. $6,338,000 appropriated.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, Terminus Reservoir, Kaweah River. $5,363,000 appropriated.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, Success Reservoir, Tule River. $3,900,000 appropriated.

▲† **California**—U. S. Eng., 1209 8 St., Sacramento, imprv. Sacramento River, $2,438,000 appropriated; improv. Sacramento River and major and minor tributaries, $1,073,000 appropriated.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Devil East Twin Warm and Lytle Creeks, Santa Ana River Basin, San Bernardino Co. $1,950,000 appropriated.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, San Antonio and Chino Creeks, Santa Ana River Basin. $1,755,000 appropriated.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, improv. Santa Clara River. $1,268,000 appropriated.

▲† **California**—U. S. Eng., 180 New Montgomery St., San Francisco, improv. Halfmoon Bay Harbor. $1,643,000 appropriated.

▲† **California**—U. S. Eng., 180 New Montgomery St., San Francisco, dredging 30 ft. depth San Bruno Shoal entrance and Redwood Creek channels, Redwood City Harbor, $1,344,000 appropriated.

▲† **California**—U. S. Eng., 180 New Montgomery St., San Francisco, dredging San Lorenzo Creek, $1,658,000.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, flood control Los Angeles County Drainage area. $15,113,000 appropriated.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Port Hueneme Harbor, $2,925,000 appropriated.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, Carbon Canyon Dam and channel, Santa Ana River. $1,950,000 appropriated.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles levees, Santa Maria River, Santa Maria Valley. $2,145,000 appropriated.

▲† **California**—U. S. Eng., 1209 8th St., Sacramento, Black Butte Reservoir, Stony Creek, Sacramento River. $2,438,000 appropriated. CD 2/13/57.

† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, imprv. Lower San Joaquin River and tributaries. $975,000 appropriated.

▲ **Calif., San Jose**—Santa Clara Valley Water Conservation Dist., 15420 Almaden Rd., cancelled $13,000,000 bond election Oct. 20:
(1) approx. 30¼ mi. pipe line $9,115,000.
(2) pipe line and canal surf. distr. sys. $1,000,000.
(3) Central Water treatment plant in Cupertino-Monte Vista area, $2,500,000.
(4) surface distr. sys. Morgan Hill area near Cupertino, Palo Alto and Morgan Hill. CD 7/31.

▲† **Connecticut**—State of Connecticut, Comm. of Agriculture, Litchfield, watershed protection North Branch Park River. 17,536 acres, for Soil Conservation Service. $2,221,218.

▲† **Florida**—Okeechobee Soil Conservation Dist., Okeechobee County Bd. Comrs., City Council of Okeechobee, Okeechobee, water protection Taylor Creek, 89,500 acres, for Soil Conservation Service, $1,532,093.

▲† **Florida**—U. S. Eng., P. O. Box 4970, Jacksonville, flood control, Central and Southern Florida. $8,775,000 appropriated.

▲† **Florida**—U. S. Eng., P. O. Box 4970, Jacksonville, Fla., imprv. Intracoastal Waterway, Jacksonville to Miami. $1,102,000 appropriated. CD 9/22/58.

▲† **Florida**—U. S. Eng., P. O. Box 4970, Jacksonville, deepening Tampa Harbor Channel, Tampa Harbor, $3,580,000 appropriated.

† **Florida**—U. S. Eng., P. O. Box 4970, Jacksonville, dredging St. Joseph Bay, Port St. Joe Harbor $975,000 appropriated.

▲† **Georgia and South Carolina**—U. S. Eng., 200 East St. Julian St., Savannah, Ga., Hartwell Reservoir, $25,740,000 appropriated. CD 9/14/55.

▲† **Georgia**—Towaliga Soil Conservation Dist., Thomaston, watershed protection Potato Creek, 154,000 acres, for Soil Conservation Service. $2,203,908.

▲† **Georgia**—U. S. Eng., 200 E. St. Julian St., Savannah, dredging Brunswick Harbor. $1,121,000 appropriated.

† **Georgia**—U. S. Eng., 200 E. St. Julian St., Savannah, flood control Savannah River below Augusta. $926,000 appropriated.

▲† **Hawaii**—U. S. Eng., P. O. 224, Honolulu, dredging Honolulu Harbor, $1,677,000 appropriated.

▲† **Illinois and Missouri**—U. S. Eng., 420 Locust St., St. Louis 2, Mo., regulating works, Mississippi River between Ohio and Missouri Rivers. $1,463,000 appropriated.

▲† **Illinois**—U. S. Eng., 420 Locust St., St. Louis 2, Mo., Carlyle Reservoir, Kaskaskia River, Upper Mississippi River Basin, $2,574,000 appropriated. CD 10/10/58.

▲† **Illinois**—U. S. Eng., 200 W. Bank Dr., Chicago, Part I, Calumet-Sag Channel, Illinois Waterway. $7,478,000 appropriated. CD 9/26/58.

▲† **Illinois**—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 5, flood control, East St. Louis and vicinity; Mississippi River. $2,243,000 appropriated.

▲† **Illinois**—U. S. Eng., 420 Locust St., St. Louis 2, Mo., flood control, Wood River Drainage and Levee Dist. $1,073,000 appropriated.

† **Illinois**—U. S. Eng., Clock Tower Bldg., Rock Island, imprv. The Sny Basin, Mississippi River, $975,000 appropriated.

▲† **Indiana**—U. S. Eng., P.O. Box 59, 830 W. Broadway, Louisville 1, Ky., Mansfield Reservoir, Raccoon Creek. $1,621,000 appropriated.

▲† **Iowa—Nebraska**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., channel stabilization, Missouri River, Sioux City, Iowa to Omaha, Neb. $5,460,000 appropriated.

▲† **Iowa**—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., flood control, Little Sioux River. $2,438,000 appropriated. CD 9/19/58.

▲† **Kansas and Missouri**—U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City 6, Mo., channel stabilization, Missouri River, Kansas City to the mouth. $3,388,000 appropriated.

▲† **Kansas**—U. S. Eng., P. O. Box 61, Tulsa, Okla., Marion Reservoir, Grand (Neosho) River. Total cost $7,000,000 ($24,000 appropriated for planning).

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., Tuttle Creek Reservoir, Big Blue River. $17,886,000 appropriated.

▲† **Kansas**—U. S. Eng., 911 Walnut St., Kansas 6, Mo., flood control, Kansas River, Topeka. $2,438,000 appropriated.

▲† **Kansas**—U. S. Eng., 911 Walnut St., Kansas City 6, Mo., dredging, Marais des Cygnes River, Ottawa. $1,365,000 appropriated.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., Pomona Reservoir, One Hundred Ten Mile Creek. $1,365,000 appropriated.

▲† **Kansas**—U. S. Eng., Davidson Bldg., Kansas City, Kan., John Redmond (Strawn) Reservoir. $1,268,000 appropriated. CD 9/5/57.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., flood control, Smoky Hill River, Salina. $1,979,000 appropriated.

▲† **Kansas**—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., Wilson Reservoir, Saline River. Total cost $15,900,000. ($644,000 appropriated).

▲† **Kentucky and Indiana**—U. S. Eng., 830 W. Broadway, Louisville, Ky., Markland Locks and Dam, Ohio River, Gallatin Co., Ky.-Switzerland Co., Ind. $9,581,000 appropriated. CD 9/5/58.

▲† **Kentucky and Indiana**—U. S. Eng., P.O. Box 59, Louisville, Ky., Lock and Dam 41, Kentucky River. $10,043,000 appropriated.

▲† **Kentucky and Ohio**—U. S. Eng., P.O. Box 2127, 237 Fourth Ave., Huntington, W. Va., Greenup locks and dam, Ohio River. $9,033,000 appropriated.

▲† **Kentucky and Ohio**—U. S. Eng., 237 4th Ave., Huntington 18, W. Va., New Richmond locks and dam. $9,068,000 appropriated.

▲† **Kentucky and Tennessee**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., Barkley Dam (Lower Cumberland Lock and Dam). $18,525,000 appropriated.

▲† **Kentucky and Tennessee**—Calloway County Soil Conservation Dist., Murray, Ky.; Graves County Soil Conservation Dist., Mayfield, Ky.; Marshall County Soil Conservation Dist., Benton, Ky.; McCracken County Soil Conservation Dist., Paducah, Ky. and Henry County Soil Conservation Dist., Cottage Grove, Tenn.; East Fork of Clarks River Watershed Dist.; and Watershed Conservancy Dist., Murray, Ky., watershed protection, east fork of Clarks River, Tenn. involving 201,441 acres, Calloway, Marshall, Graves, McCracken Counties,

Ky. and Henry Co., Tenn., for Soil Conservation Service, $3,900,940.

▲† **Kentucky and Tennessee**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., power house for Barkely Dam (Lower Cumberland Lock and Dam), $10,000,000. Sverdrup & Parcel, Engineering Co., 417 Montgomery St., San Francisco, Calif., engrs. CD 9-29.

▲† **Kentucky** — Union County Soil Conservation Dist., Morganfield, Ky.; Webster County Soil Conservation Dist., P.O. Box 138, Dixon, Ky.; Crab Orchard Creek Watershed Conservancy Dist., Dixon, Ky., watershed protection, Crab Orchard Creek, 96,893 acres, Union and Webster Counties, for Soil Conservation Service, $3,764,826.

▲† **Kentucky**—U. S. Eng., P.O. Box 59, Louisville, Zone 1, Buckhorn Reservoir, Kentucky River, Ohio River Basin, $2,951,000 appropriated.

▲† **Kentucky**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., Nolin Reservoir, Nolin River, $1,755,000 appropriated. CD 4-17.

▲† **Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, Rough River Reservoir and channels, $2,257,000 appropriated.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging Amite River and tributaries, $1,174,000 appropriated.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging Mississippi River gulf outlet, $5,753,000 appropriated.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging Gulf Intracoastal Waterway, Plaquemine-Morgan City alternate route, $5,802,000 appropriated.

▲† **Massachusetts**—Middlesex County Soil Conservation Dist., Old Sudbury Rd., Lincoln, Mass. and Northeastern Worcester County Soil Conservation Dist., Turnpike Rd., Westboro, Mass., 241,617 acres watershed protection, Sudbury-Assabet-Concord River, Middlesex and Worcester Counties, $1,661,824.

▲† **Massachusetts**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., dredging Weymouth Fore River, $3,008,000 appropriated.

▲† **Massachusetts**—U. S. Eng., 424 Trapelo Rd., Waltham, East Brimfield Reservoir, Quinebaug River, $1,074,000 appropriated.

▲† **Massachusetts**—U. S. Eng., 424 Trapelo Rd., Waltham, flood control, Hoosic River, North Adams, $2,857,000 appropriated.

† **Massachusetts**—U. S. Eng., 424 Trapelo Rd., Waltham, West Hill Reservoir, West River, Blackstone River Basin, $975,000 appropriated. CD 4-7.

▲† **Michigan**—U. S. Eng., 600 E. Jefferson St., Detroit, Mich.; Great Lakes connecting channels, $26,325,000 appropriated.

▲† **Michigan**—U. S. Eng., 1101 Washington Blvd., Detroit, Zone 31, imprv. South Canal, St. Mary's River, $2,479,000 appropriated.

▲† **Michigan**—U. S. Eng., 1101 Washington Blvd., Detroit, flood control Kalamazoo River, Battle Creek, $1,509,000 appropriated.

▲† **Minnesota**—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, St. Anthony's Falls Lock and Dam, Mississippi River, $2,379,000 appropriated.

▲† **Mississippi**—U. S. Eng., 2301 Grant St., Mobile, Ala., imprv. Pascagoula Harbor, $1,211,000 appropriated.

▲† **Missouri and Arkansas**—U. S. Eng., P. O. 867, Little Rock, Ark., Table Rock Reservoir, White River, $1,950,000 appropriated.

▲† **Missouri**—U. S. Eng., 420 Locust St., St. Louis, Zone 2, flood control, St. Louis, $4,095,000 appropriated.

▲† **Missouri**—U. S. Eng., 911 Walnut St., Kansas City 6, Mo., Pomme de Terre Reservoir, Missouri River Basin, Hickory Co., $3,900,000 appropriated.

▲† **Missouri**—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., Bear Creek Reservoir, Mississippi River, $1,006,000 appropriated.

▲† **Montana**—U. S. Eng., Garrison Riverdale, N. D., 2nd powerplant, Fort Peck Dam, $8,044,000 appropriated.

▲† **Nebraska, Kansas and Missouri**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., channel stabilization, Missouri River, Omaha, Neb. to Kansas City, Kan. and Kansas City, Mo., $2,730,000 appropriated.

▲† **New Hampshire**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Hopkinton-Everett Reservoirs, Contoocook and Piscataquog Rivers, $5,429,000 appropriated.

▲ **New Mexico**—U. S. Eng., P. O. Box 1538, Albuquerque, Abiquiu Reservoir, Rio Chama, near Espanola, $3,218,000 appropriated.

▲† **New York and New Jersey**—U.S. Eng., 111 E. 16th St., New York 3, N. Y., dredging, New York and New Jersey channels, $2,720,000 appropriated.

▲† **New York**—U. S. Eng., 111 East 16th St., Zone 3, flood control, Endicott, Johnson City and Vestal, Susquehanna River, $1,658,000 appropriated.

▲† **New York**—U. S. Eng., Engineer Park, Buffalo, Zone 7, Buffalo Harbor, north entrance, $2,096,000 appropriated.

▲† **North Dakota**—U. S. Eng., Riverdale, Garrison Reservoir, Missouri River, $4,924,000 appropriated.

▲† **Ohio and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., New Cumberland locks and dam, Ohio River, $6,630,000 appropriated.

▲† **Ohio and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., Pike Island Locks and Dam, Ohio River, $3,413,000 appropriated.

▲† **Ohio**—Celeryville Conservancy Dist., Plymouth, Huron SCD, Norwalk, Divide SCD, Bucyrus, Richland SCD, 157 N. Mulberry St., Mansfield, watershed protection Marsh Run, 20,006 acres for Soil Conservation Service, $1,334,836.

▲† **Ohio**—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., Dillon Reservoir, $5,031,000 appropriated. CD 9-13-56.

▲ **Oklahoma**—U. S. Eng., Box 61, Tulsa, Eufaula Reservoir, Canadian River, $13,065,000 appropriated.

▲† **Oklahoma**—U. S. Eng., Box 61, Tulsa, Oologah Reservoir, Verdigris River, Arkansas River Basin, $12,188,000, appropriated.

▲† **Oklahoma**—U. S. Eng., Box 61, Tulsa, Keystone Reservoir, Arkansas River $9,750,000 appropriated. CD 9-19-58.

▲† **Oregon and Washington**—U. S. Eng., City-County Airport, Walla Walla, Wash., John Day lock and dam, Columbia River $19,500,000 appropriated.

▲† **Oregon and Washington**—U. S. Eng., 628 Pittock Block, Portland, Wash., The Dalles Lock and Dam, Oregon and Washington, $6,825,000 appropriated. CD 9-17-56.

▲† **Oregon and Washington**—U. S. Eng., 628 Pittock Block, Portland, Ore., dredging 27 ft. channel, Columbia River between Vancouver, Wash. and The Dalles, Ore. $1,571,000 appropriated.

▲† **Oregon**—U. S. Eng., Pittock Block, Portland, dredging Rouge River Harbor at Gold Beach, $1,463,000 appropriated.

▲† **Oregon**—U. S. Eng., Pittock Block, Portland, Hills Creek Reservoir, Middle Fork, Willamette River, $8,093,000 appropriated.

▲† **Oregon**—Upper Willamette SCD, Box 412, Cottage Grove, County of Lane, Courthouse, Eugene, and McKenzie Water Control Dist., Eugene, watershed protection 16,700 acres, Willakenzie Area, for Soil Conservation Service, $1,294,795.

▲† **Oregon**—U. S. Eng., 628 Pittock Block, Portland, Cougar Reservoir, $8,775,000 appropriated.

▲† **Pennsylvania and New Jersey**—U. S. Eng., Federal Bldg., Pittsburgh, dredging Delaware River, Phila., Pa., Naval Base to Trenton, N. J. $12,188,000 appropriated.

(Continued on page 136)

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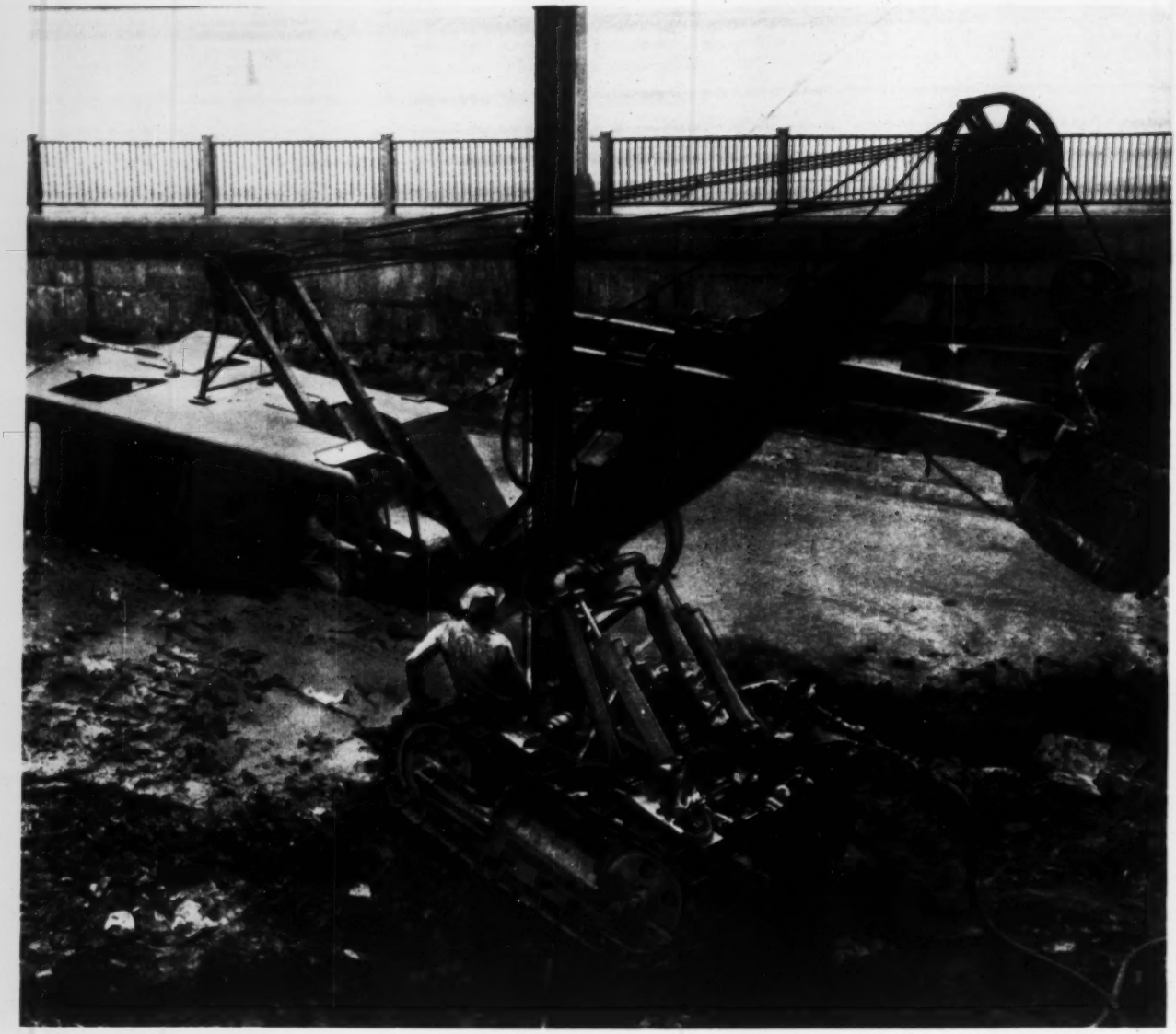

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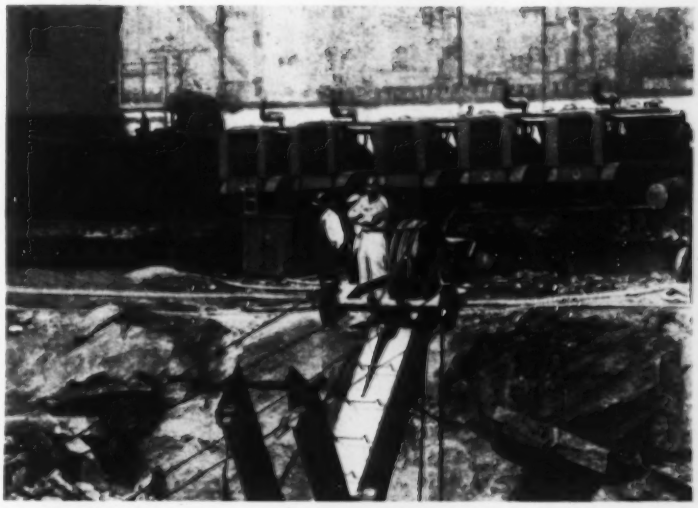

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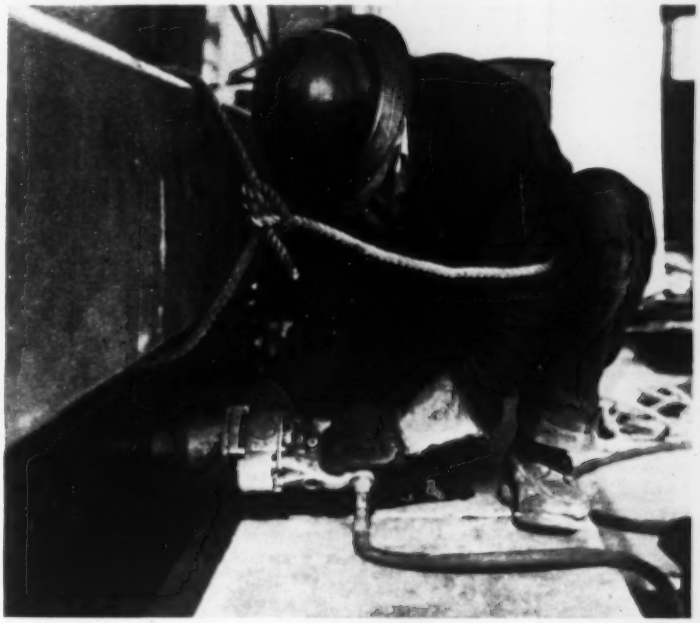

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(Continued from page 133)

▲† **Pennsylvania and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., Hildebrand Lock and Dam, Mononghela River. $1,247,000 appropriated. CD 8/15/55.

▲† **Pennsylvania**—U. S. Eng., 24th and Maryland Ave., Baltimore, Md., Stillwater Reservoir, Lackawanna River. $1,463,000 appropriated.

▲† **Pennsylvania**—U. S. Eng., 2635 Abbottsford Ave., Phila., Prompton Reservoir, Lackawaxan River. $1,092,000 appropriated.

▲† **Pennsylvania**—U. S. Eng., 24th St. and Maryland Ave., Baltimore 18, Md., Kettle Creek Reservoir, West Branch Susquehanna River. $1,853,000 appropriated.

▲† **Pennsylvania**—U. S. Eng., 2635 Abbottsford Rd. Phila., Bear Creek Reservoir, Lehigh River. $3,315,000 appropriated.

▲ **Pennsylvania**—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Zone 19, imprv. channel, Tunungwant Creek. $2,340,000 appropriated.

▲† **Pennsylvania**—Wayne County Bd. Comrs., Lakewood, Pa., Wayne County Soil Conservation Dist., Lakewood, Pa., Pike County Bd. Comrs., Pike County Soil Conservation Dist., Milford, Pa., Monroe County Bd. Comrs. & Monroe County Soil Conservation Dist., Stroudsburg, Pa., watershed protection Greene-Dreher, 47,810 acres, Wayne, Pike and Monroe Counties for Soil Conservation Service. $2,899,758.

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., Big Bend Reservoir, Missouri River. $1,950,000 appropriated. CD 10/4/55.

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., Oahe Reservoir, Missouri River Basin. $42,413,000 appropriated.

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., flood control Sioux Falls. $1,221,000 appropriated.

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., Fort Randall Reservoir, Missouri River Basin. $1,121,000 appropriated.

▲† **Texas**—Alamo Soil Conservation Dist., Rte. 10, Box 88, San Antonio, Tex., San Antonio River Auth., San Antonio, Tex., watershed protection, Martinez Creek, 56,000 acres Bexar Co., for Soil Conservation Service. $1,143,481.

▲† **Texas**—Fannin County Soil Conservation Dist., Bonham, Tex., Upper Elm-Red Soil Conservation Dist., Southmayd, Tex., Fannin County Water Control & Imprvt. Dist. No. 1, Bonham, Tex., watershed protection Caney Creek 46,784 acres, Fannin and Grayson Counties for Soil Conservation Service. $1,545,615.

▲† **Texas**—U. S. Eng., P.O. Box 1229, Galveston, Canyon Reservoir Guadalupe River. $1,950,000 appropriated.

▲ **Texas**—U. S. Eng., P.O. Box 1129, Galveston, flood control Buffalo Bayou and tributaries, San Jacinto River. $1,609,000 appropriated.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, imprv. Brazos Island Harbor. $1,463,000 appropriated.

▲ **Texas**—U. S. Eng., P.O. Box 1229, Galveston, Cooper Reservoir and Channels, South Sulphur River. $1,268,000 appropriated.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, Port Aransas-Corpus Christie Waterway, 36 ft. channel and realinment at bascule bridge. $1,268,000 appropriated. CD 9/25/58.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, 36 ft. channel and widen Houston Ship Channel. $1,365,000 appropriated. CD 9/23/58.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, Sabine-Neches Waterway. $1,463,000 appropriated.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, Matagorda Ship Channel. $146,000 appropriated for planning. CD 9/26/58.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, channel, seawall, Galveston Harbor. $1,950,000 appropriated.

▲† **Texas**—U. S. Eng., Box 1600, Fort Worth, Somerville Reservoir, Yegua Creek, $13,000,000, ($83,000 appropriated for planning).

▲† **Texas**—U. S. Eng., Box 1600, Fort Worth, Waco Reservoir, Bosque River. $3,900,000 appropriated.

▲† **Texas**—U. S. Eng., 100 W. Vickery St., Fort Worth, McGee Bend Dam, Angelina River. $5,655,000 appropriated.

† **Texas**—U. S. Eng., 100 W. Vickery, Fort Worth, Navarro Mills Reservoir, Trinity River, Navarro Co. $975,000 appropriated. CD 10/24/58.

▲† **Texas**—U. S. Eng., Box 1229, Galveston, realined route, vicinity Aransas Pass, Gulf Intracoastal Waterway, $938,000 appropriated; Guadalupe River Channel to Victoria, Gulf Intracoastal Waterway, $585,000 appropriated; Colorado River Channel, Gulf Intracoastal Waterway, $390,000 appropriated; channel to Port Mansfield, Gulf Intracoastal Waterway, $146,000 appropriated.

▲† **Utah**—U. S. Eng., 1209 B St., Sacramento, Calif., flood control Jordan River, Salt Lake City. $1,306,000 appropriated.

▲† **Vermont**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., North Hartland Reservoir. $2,507,000 appropriated.

▲† **Vermont**—U. S. Eng., 150 Causeway St., Boston, Mass., North Springfield Reservoir, Black River. $1,989,000 appropriated.

▲† **Vermont**—U. S. Eng., 150 Causeway St., Boston, Mass., Townshend Reservoir. $2,436,000 appropriated. CD 12/12/56.

▲† **Vermont**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Ball Mountain Reservoir, West River. $2,496,000 appropriated.

▲† **Virginia**—U. S. Eng., foot of Front St., Norfolk, Norfolk Harbor, widen 40 ft. channel and Craney Island Anchorages. $3,563,000 appropriated. CD 7/31/53.

▲† **Washington**—Snohomish SCD, Marysville, French Slough Flood Control Dist., Drainage Dist. No. 4 of Snohomish Co., Snohomish, watershed protection 18,414 acres, French Creek, for Soil Conservation Service. $3,121,795.

▲† **Washington**—Snohomish SCD, Marysville, Marshland Flood Control Dist., P.O. Box 68, Everett, Drainage Dist. No. 1 and No. 2, Snohomish Co., Snohomish, watershed protection 14,006 acres Marshland, for Soil Conservation Service. $4,220,710.

▲† **Washington**—U. S. Eng., City-County Airport, Walla Walla, Ice Harbor locks and dam, Columbia River. $31,200,000 appropriated.

▲† **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Howard A. Hanson (Eagle Gorge) Reservoir. $5,850,000 appropriated. CD 11/13/57.

▲† **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, Chief Joseph Dam. $1,073,000 appropriated.

▲† **Washington**—U. S. Eng., City-County Airport, Walla Walla, Little Goose Lock and dam, Snake River, Total cost $139,000,000 ($438,000 appropriated).

▲† **West Virginia**—U. S. Eng., P.O. Box 2127, Sutton Reservoir, Elk River. $3,332,000 appropriated.

AIRPORTS

▲† **Alaska, Nzkneck**—SUPPLY FACILITIES, etc.—U.S. Eng., Anchorage, supply facilities, utilities, King Salmon Airport. $1,365,000 appropriated.

▲† **Ariz., Yuma**—OPERATIONAL FACILITIES, etc.—Public Works Officer, 12th Naval Dist., Federal Office Bldg., San Francisco, Calif., operational and training facilities, maintenance facilities and troop housing, Marine Corps Auxiliary Air Station. $3,439,000 appropriated. (Correction—owner). CD 9/28.

▲† **Ark., Blytheville**—NIKE HERCULES AIR DEFENSE MISSILE SITES—U. S. Eng., P.O. Box 867, Little Rock, will not construct Nike Hercules Air Defense Missile Sites, $3,000,000-$4,000,000. Project cancelled. CD 2/13.

▲† **Calif., Hamilton Air Force Base**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 180 New Montgomery St., San Francisco, operational and maintenance facilities. $1,131,000 appropriated.

▲† **Japan, Atsugi**—OPERATIONAL FACILITIES—Officer in Charge Constr., Bureau Yards & Docks, Contracts Far East Navy No. 3923, Box 61, Fleet Post Office, San Francisco, Calif., U.S.A., operational facilities, Naval Air Station. $1,640,000 appropriated.

▲† **Calif., Santa Ana**—BARRACKS—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, barracks, Marine Corps Air Facility. $2,216,000 appropriated.

† **Ga., Albany**—OPERATIONAL FACILITIES, etc.—U.S. Eng., 200 E. St. Julian St., Savannah, operational, maintenance and community facilities, Turner Air Force Base. $984,000 appropriated. CD 9/9/57.

▲† **Idaho, Mountain Home**—U. S. Eng., City-County Airport, Walla Walla, Wash., Nike Hercules Air Defense missile sites, Mountain Home Air Force Base. $3,000,000-$4,000,000 appropriated. Constr. 1959-1960. CD 3/19.

▲† **Ind., Peru**—OPERATIONAL FACILITIES, etc.—Ninth Naval Dist., Great Lakes Naval Training Station, Great Lakes, Ill., operational, maintenance, supply and community facilities and utilities, Bunker Hill Air Force Base. $1,562,000 appropriated.

▲† **Kan., Salina**—OPERATIONAL FACILITIES—U. S. Eng., Federal Office Bldg., Kansas City, Mo., operational facilities, Schilling Air Force Base. $3,938,000 appropriated.

▲† **Md., Andrews Air Force Base**—OPERATIONAL FACILITIES, etc.—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., operational, maintenance, supply and community facilities, utilities, Camp Springs. $16,980,000 appropriated. CD 9/9/58.

▲† **Md., Camp Springs**—JET ENGINE, etc.—P. Wks. Officer, Potomac River Command, Naval Gun Factory, Wash., D. C., jet engine run-up test pads, transportation shop, parachute shop and mess hall, Naval Air Facility, John Towers Field, Andrews Air Force Base. $1,051,000 appropriated.

▲† **Mass., Bedford**—TRAINING FACILITIES, etc.—U. S. Eng., 150 Causeway St., Boston, training and research development and test facilities, Lawrence G. Hanscom Field. $1,952,000 appropriated.

▲† **Mich., Kinross**—TRAINING FACILITIES, etc.—U. S. Eng., 1101 Washington Blvd., Detroit, Mich., training, maintenance and supply facilities and troop housing, Kinross Air Force Base. $1,006,000 appropriated. CD 3/12/58.

† **Mich., Marquette**—TRAINING FACILITIES, etc.—U. S. Eng., 1101 Washington Blvd., Detroit, training, maintenance, supply, administrative and community facilities, troop housing, K. I. Sawyer Municipal Airport. $983,000 appropriated. CD 9/9/58.

▲† **Mich., Oscoda**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 1101 Washington Blvd., Detroit, Mich., operational, maintenance and supply facilities, utilities, Wurtsmith Air Force Base. $1,560,000 appropriated.

▲† **Mont., Glasgow**—OPERATIONAL AND MAINTENANCE FACILITIES, etc.—U. S. Eng., City-County Airport, Walla Walla, Wash., operational, maintenance and supply facilities, troop housing, community facilities and utilities, Glasgow Air Force Base. $2,028,000 appropriated. CD 9/9/58.

† **N. J., Wrightstown**—OPERATIONAL FACILITIES—U. S. Eng., 2635 Abbottsford Ave., P. O. Box 8629, operational facilities, maintenance facilities and utilities, McGuire Air Force Base. $907,000 appropriated.

† **N. M., Alamogordo**—RESEARCH FACILITIES, etc.—U. S. Eng., P. O. Box 1538, Albuquerque, research, development and test facilities and utilities, Holloman Air Force Base. $909,000 appropriated. CD 9/18/57.

† **N. M., Roswell**—OPERATIONAL FACILITIES, etc.—U. S. Eng., P. O. Box 1538, Albuquerque, operational facilities and ground imprvs., Walker Air Force Base. $902,000 appropriated.

▲† **N. Y., Plattsburgh**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 111 East 16th St., New York, Zone 3, operational and maintenance facilities, Plattsburgh Air Force Base. $1,029,000 appropriated.

▲† **N. C., Goldsboro**—OPERATIONAL AND TRAINING FACILITIES, etc.—U. S. Eng., 308 Customhouse, Wilmington, operational and training facilities, maintenance and supply facilities, troop housing, utilities, Seymour-Johnson Air Force Base. $2,534,000 appropriated.

▲† **O., Wilmington**—HOSPITAL—U. S. Eng., 237 Fourth Ave., Huntington, W. Va., plans by Sam Hannaford & Sons, Dixie Terminal, Cincinnati, 30-bed hospital, Clinton County Air Base. $1,500,000. CD 9/25, under Public Buildings.

▲† **Pa., Middletown**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 24th St. and Maryland Ave., Baltimore, Md., operational, maintenance, supply, medical and community facilities, Olmsted Air Force Base. $1,421,000 appropriated.

▲† **S. D., Rapid City**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., operational, maintenance facilities, Ellsworth Air Force Base. $1,145,000 appropriated.

▲† **Tenn., Smyrna**—MAINTENANCE FACILITIES—U. S. Eng., 306 Federal Office Bldg., Nashville, maintenance facilities, Sewart Air Force Base. $2,249,000 appropriated.

▲† **Tex., Waco**—OPERATIONAL FACILITIES—U. S. Eng., Box 1600, Fort Worth, operational facilities, James Connally Air Force Base. $216,000 appropriated. CD 8/21/56.

▲† **Tex., Wichita Falls**—OPERATIONAL FACILITIES, etc.—U. S. Eng., Box 1600, Fort Worth, operational, maintenance and supply facilities, Sheppard Air Force Base. $5,636,200 appropriated. CD 9/9/58.

▲ **Utah, Salt Lake City**—MUNICIPAL AIRPORT—Salt Lake City Corp., City-County Bldg., North-South Runway, Municipal Airport and imprvs. $1,209,259.

▲† **Va., Langley Air Force Base**—MAINTENANCE FACILITIES—U. S. Eng., foot of Front St., Norfolk, maintenance facilities. $1,962,000 appropriated.

▲† **W. Va., Sugar Grove**—MAINTENANCE FACILITIES, etc.—Dist. P. Wks. Office, Fifth Naval Dist., Room 307, Bldg. N-26, Naval Base, Norfolk 11, Va., maintenance, medical facilities, administrative facilities and utilities and ground imprvs., Naval Radio Research Station. $3,957,000 appropriated.

▲† **Wis., Kansasville**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., operational and training, maintenance, supply and administrative facilities, troop housing, community facilities and utilities, Richard Bon Air Force Base, (AFBM). $16,000,000 appropriated.

▲† **Wyo., Cheyenne**—ADMINISTRATIVE FACILITIES, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., administrative, troop housing, community facilities and utilities, Francis E. Warren Air Force Base. $1,461,000 appropriated.

▲† **Newfoundland, Argentia**—TROOP HOUSING, etc.—Resident Officer in Charge Constr., Bureau Yards & Docks, Contracts, U. S. Naval Station, troop housing and community facilities, Naval Air Station. $4,133,000 appropriated.

LATIN AMERICA

▲ **Argentina, Buenos Aires**—AUTO AND TRUCK PLANT—Chrysler Corp., 341 Massachusetts St., Highland Park, Mich., U.S.A., 30,000 sq. yd. auto and truck plant addn. $8,000,000.

▲ **Argentina, Buenos Aires**—OFFICE—Fiat-Someca S.A., Suipacha 767, Buenos Aires, 20 story office. $2,500,000.

▲ **Argentina, Buenos Aires**—TRUCK PLANT—General Motors Corp., General Motors Bldg., Detroit, Mich., U.S.A., truck plant. $20,000,000 ($16,000,000 for equipment).

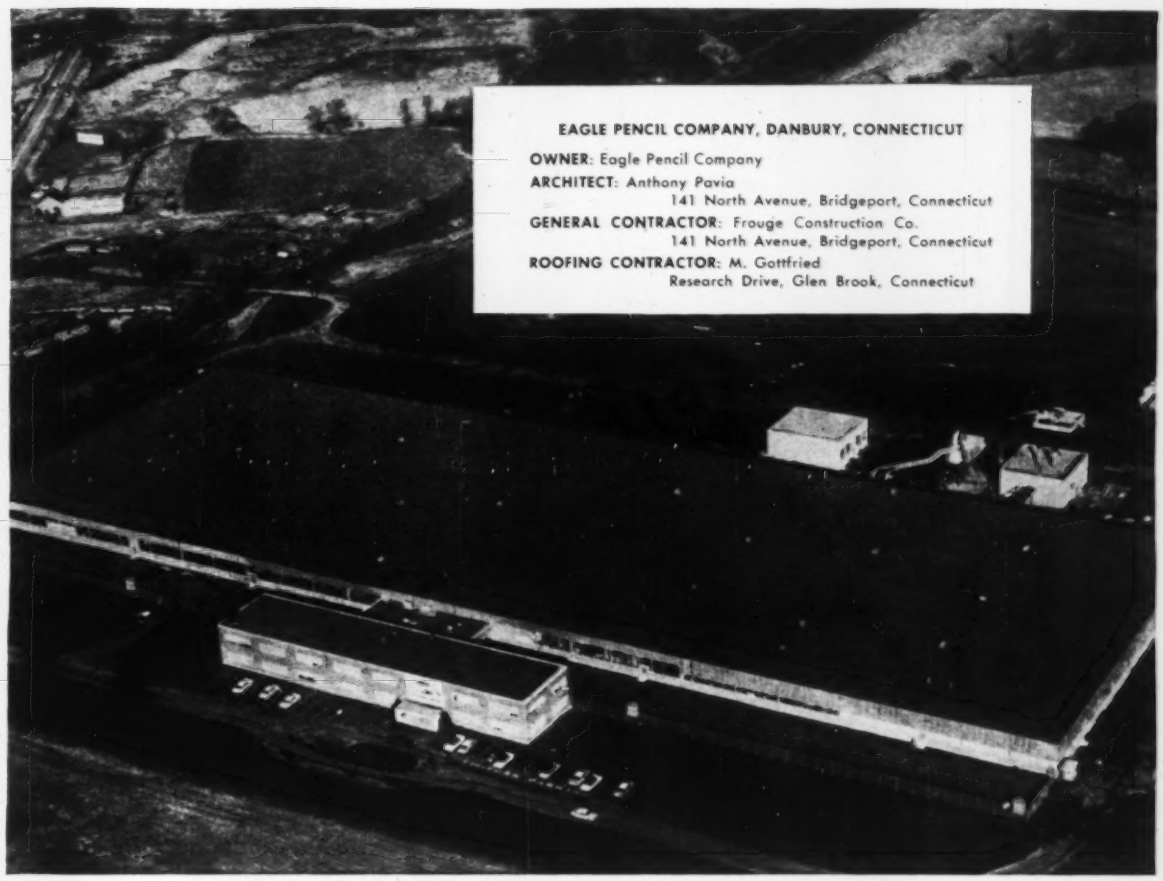
▲ **Argentina, Cordoba**—AUTO AND TRUCK PLANT—Fiat-Someca S.A., Suipacha 767, Buenos Aires, auto and truck plant. $16,000,000.

PUERTO RICO

▲† **Puerto Rico, Ramey Air Force Base**—OPERATIONAL FACILITIES, etc.—U. S. Eng., P.O. Box 4970, Jacksonville, Fla., U.S.A., operational facilities and supply facilities. $1,251,000 appropriated.

▲† **Puerto Rico, Roosevelt Roads**—OPERATIONAL FACILITIES, etc.—P. Wks. Office, Caribbean Naval Sta., San Juan, operational, hospital, troop housing,

(Continued on page 138)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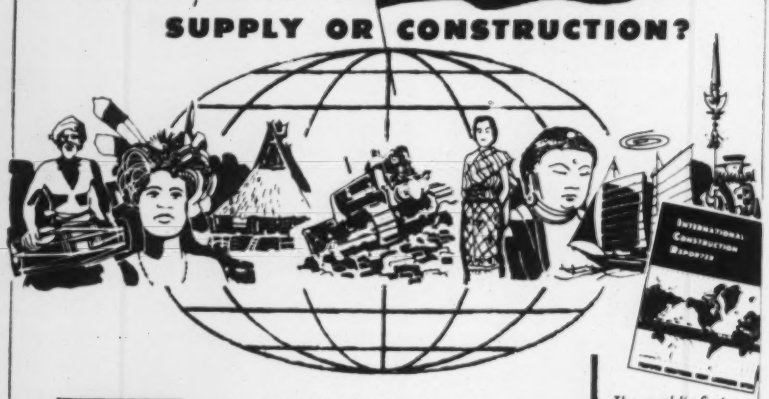

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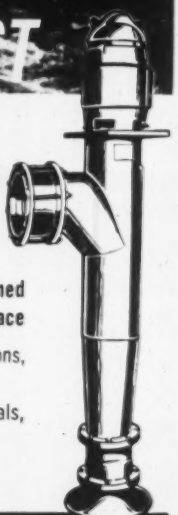

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(Continued from page 136)

community facilities and utilities, ground improv., Naval Air Station, $2,810,000 appropriated.

PUBLIC BUILDINGS

▲† Ariz., Yuma—HOUSING—Dist. P. Wks. Office, 11 Naval Dist., 1220 Pacific Highway, San Diego 30, Calif., plans by Scholer & Fuller, 2566 N. Camel, P. O. Box 5157, Tucson, 100 units Capehart Housing, Marine Auxiliary Air Station, $1,650,000.

▲† Calif., Camp Pendleton — BARRACKS — Eleventh Naval Dist., 1220 Pacific Hy., San Diego, barracks, Camp del Mar, $2,258,000 appropriated.

▲† Calif., Inyokern—HOUSING—Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego, Zone 30, plans by Palmer & Krisel, 11757 San Vicente Blvd., Los Angeles, Zone 49, 500 units Capehart Housing, Naval Ordnance Test Station, China Lake, $8,250,000.

▲† Calif., Lemoore—HOUSING—Dist. P. Wks. Office, 12th Naval Dist., San Bruno, plans by Richard J. Neutra, Robert E. Alexander, Donald Francis Haines, 341 Market St., San Francisco, 500 units Capehart Housing, Naval Aux. Air Station, 2nd increment, $8,250,000.

▲† Calif., Twentynine Palms — HOUSING — Dist. P. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Zone 30, plans by Palmer & Krisel, 11757 San Vicente Blvd., Los Angeles, Zone 49, 150 units Capehart Housing, Marine Corps Base, $2,475,000.

▲† Calif., Twentynine Palms — OPERATIONAL AND TRAINING FACILITIES, etc.—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, operational and training, ammunition storage facilities and utilities, Marine Corps Base, $1,137,000 appropriated.

▲ Calif., Wheatland—SCHOOL—Wheatland Union High School Dist., P. O. Box 398, bond election Dec. 8, high school, $1,400,000. CD 6/19.

▲ Colo., Aurora—SCHOOLS—Aurora P. Schools, 1085 Peoria, voted $1,950,000 bonds Sept. 28, schools. CD 7/30.

▲ Conn., Bridgeport—SCHOOL—Town, Town Hall, Second North End High School, $2,000,000.

▲† Conn., Groton—HOUSING—Dist. P. Wks. Officer, Third Naval Dist., 90 Church St., New York, N. Y., plans by Kane & Fairchild, 734 Asylum Ave., Hartford, 500 units Capehart Housing, Submarine Base, (2nd increment), $8,250,000. CD 9/23.

▲ Conn., Norwich—TECHNICAL INSTITUTE—State P. Wks. Dept., 165 Capitol Ave., Hartford, plans by Lester J. A. Julianelle, 241 Orange St., New Haven, State Technical Institute, $1,152,000. CD 3/27/56.

▲ D. C., Wash.—SCHOOL—General Services Admin., 19 and F Sts. N. W., plans by William Denton, 1300 Connecticut Ave. N. W., Kendal School, Gallaudet College, $1,288,000. CD 11/9/56.

▲† Fla., Milton—HOUSING—Dist. P. Wks. Officer, 6 Naval Dist., Bldg. 13, Charleston, S. C., plans by Joseph H. Bryson, 301-23 Greenleaf Annex, Jacksonville, 229 units Capehart Housing, Naval Auxiliary Air Station, Whiting Field, $3,778,500. CD 5/22/57, under Airports.

▲† Fla., Key West—HOUSING—Dist. P. Wks., Sixth Naval Dist., Charleston, S. C., plans by Norman M. Giller & Assocs., 1575 Washington Ave., Miami Beach, 500 units Capehart Housing, Naval Station and Naval Air Station, $8,250,000.

▲† Ga., Brunswick—HOUSING—Dist. P. Wks. Officer, 6 Naval Dist., Bldg. 13, Charleston, S. C., plans by Abreu & Robeson, Inc., P. O. Box 535, Richmond St., 225 unit Capehart Housing at Naval Air Station, Glynco, $3,712,000. CD 8/29.

▲† Hawaii, Honolulu—TRAINING FACILITIES, etc.—U. S. Eng., P. O. Box 224, training and community facilities, $1,259,000 appropriated.

▲ Ill., Decatur—SCHOOL—Decatur School Dist., Bd. Educ., $6,286,200 bond election Nov. 10, school.

▲ Kan., Hutchinson—SCHOOL—Bd. Educ., 1300 N. Plum St., plans by Mann & Co., 201 E. 2nd St., Senior High School, 13th and Severence Sts., $2,300,000. CD 11/21/56.

▲† Ky., Fort Campbell—UTILITIES—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., utilities, $2,360,000 appropriated. CD 9/17/57.

▲† Ky., Fort Knox—TANK REPAIR SHOPS—U. S. Eng., P. O. Box 59, Louisville, Zone 1, plans by Cts & Grimes, 319 W. Jefferson, Louisville, Zone 2, 5 tank repair shops (4 battalion and 1 regular shops), $1,500,000. Southern Engineering Co., 322 W. Jefferson, Louisville, Zone 2, consult. engrs. CD 1/28 and 9/5.

▲† La., New Iberia—HOUSING—Dist. P. Wks. Officer, 8th Naval Dist., Bldg. 16, Naval Station, New Orleans Zone 12, 178 units Capehart Housing, Naval Auxiliary Air Station, $2,887,500. CD 3/22/57.

▲† Md., Bethesda—HOSPITAL—P. Wks. Office, Potomac River Command, Naval Gun Factory, Wash., D. C., hospital, National Naval Medical Center, $6,788,000 appropriated. CD 2/25.

▲† Md., Fort George G. Meade—TRAINING FACILITIES, etc.—U. S. Eng., 24 St. and Maryland Ave., Baltimore, training facilities and medical, utilities, $2,012,000 appropriated.

▲ Md., Marlboro—SCHOOL—Prince George's County Bd. Educ., plans by Kea & Shaw, 5109 Baltimore Ave., Hyattsville, Carrollton Junior High School, Lanham, $1,300,000.

(Continued on page 140)

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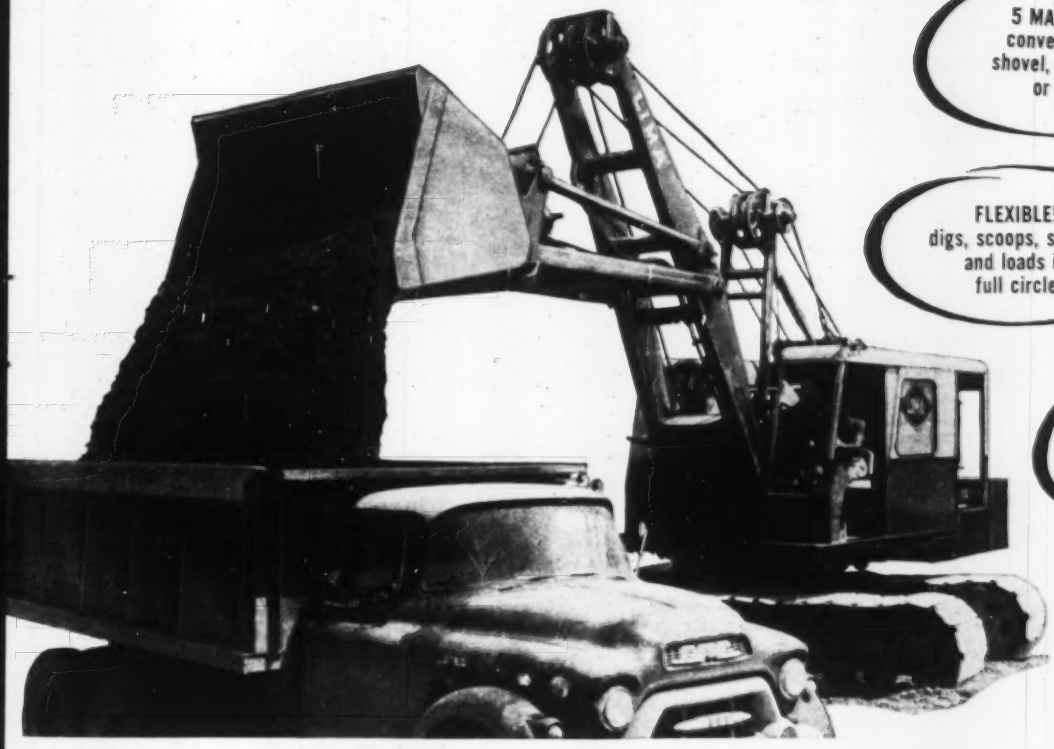

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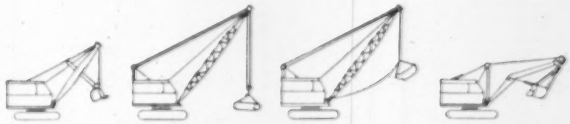

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(Continued from page 138)

▲ **Md., Rockville**—SCHOOL—Montgomery Co. Bd. Educ., plans by McLeod & Ferrara, 1200 18th St. N.W., Wash., D. C., West Bethesda high school, Bethesda. $2,800,000.

▲ **Minn., St. Paul**—SCHOOLS—Bd. Educ. Special School Dist. No. 2, $23,500,000 bond election Nov. 3, schools. G. S. Silverman, City Hall and Court House, owner's archt. CD 11/10.

▲† **Miss., Meridian**—HOUSING—Dist. P. Wks. Officer, 6th Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C., plans by James T. Canizaro, Lacy & Stahnke, P. O. Box 842, 320 units Capehart Housing, Naval Auxiliary Air Station, $5,280,000. CD 8/19.

▲ **Mont., Glendive**—SCHOOL—Glendive High School Bldg. Dist., 1 plans by Oswald Berg & Assocs., Bozeman, high school, $1,600,000. CD 9/25.

Mont., Shelby—HIGH SCHOOL—Bd. School Trustees, Shelby, plans by Brinkman & Lenon, Kalispell, high school. $900,000. CD 9/3.

▲† **Nev., Fallon**—HOUSING—Dist. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. 106 units Capehart Housing, Naval Aux. Air Station.

▲ **N. J., Caldwell**—SCIENCE, etc.—Caldwell College, science bldg. wing, 200-student dormitory and 100-patient infirmary, $2,500,000. To go ahead in 1960.

▲ **N. J., Franklin Twp. (Middlebush, P. O.)**—SCHOOL—Bd. Educ., plans by Micklewright & Mountford, E. Stuyvesant, Trenton, defeated referendum bonds and project Sept. 22, high school. $2,679,000. CD 7/28.

▲ **N. J., Franklin Twp. (Middlebush, P. O.)**—SCHOOL—Bd. Educ., Franklin Twp., Middlebush, defeated referendum bonds and project Sept. 22, high school. $2,679,000. Micklewright & Mountford, E. Stuyvesant, Trenton, archts. CD 7/28.

▲ **N. J., Mount Holly**—SCHOOL—Bd. Educ., defeated $1,400,000 bonds Sept. 22, Junior High School, $1,409,750. CD 8/18.

▲ **N. J., Ramsey**—SCHOOL—Bd. Educ. Borough of Ramsey, Borough Hall, school, $1,000,000. CD 5/7/56.

▲ **N. J., Ridgefield Park**—SCHOOL—Bd. Educ., plans by L. Freeland Fellgraff, 577 Teaneck Rd., high school, Veterans Park Area. $2,000,000. CD 9/11.

▲ **N. J., South River**—SCHOOL—Bd. Educ., Borough of South River, voted bonds and project Sept. 22, high school, Lexington Ave. $1,720,000. Micklewright & Mountford, E. Stuyvesant Ave., Trenton, archts. CD 1/12.

▲ **N. J., Teaneck**—CIVIC CENTER—Teaneck Twp. bond election Nov. 3, 60,000 sq. ft. Civic Center, Queen Anne Rd. $1,250,000. Emile Gorham, 703 Penna Ave., archt. CD 5/23/56.

▲ **N. J., Trenton**—HOUSING—Trenton New Jersey Housing Auth., 875 N. Willow St., plans by Kramer, Hirsch & Carchidi, 115 W. State St., 150 unit public housing development, Oakland St. $1,500,000.

▲ **N. Y., Valley Stream**—SCHOOLS—Central High School Dist. No. 1, Fletcher Ave., referendum vote Nov. 17, Central High School addn. $1,814,000; Memorial Junior High School addn. $1,066,000; North High School addn., $410,000.

▲† **N. C., Fort Bragg**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 308 Customhouse, Wilmington, operational facilities and maintenance facilities, $1,543,000 appropriated. CD 2/26/54.

▲ **O., Independence**—SCHOOL—Bd. Educ., 6565 Brecksville Rd., bond election Nov. 3, high school. $1,550,000. Ward, Conrad, Schneider, 1720 Euclid, Cleveland, Zone 15, archts. CD 6/11.

▲ **Pa., Abington**—SCHOOL—Abington Twp. School Dist., high school addn., Project 482. $2,800,000.

▲ **Pa., King of Prussia**—SCHOOLS—Upper Merion Twp. School Dist., high school, Project No. 475, Upper Merion Twp., $1,200,000; high school, Proj. 476, $700,000.

▲ **Pa., Pittsburgh**—SCHOOL—Upper St. Clair Twp. School Dist., 515 Ft. Courch Rd., Zone 28, high school Upper St. Clair Twp. Proj. 464, $1,875,000.

▲ **Pa., Pottsville**—SCHOOL—Pottsville School Dist., high school addn., Proj. 484. $1,500,000.

▲† **R. I., Newport**—HOUSING—Dist. P. Wks Office, 1st Naval Dist., 495 Summer St., Boston, Mass., plans by Kane & Fairchild, 734 Asylum Ave., Hartford, Conn., 500 units Capehart Housing Naval Base, $8,250,000. Constr. 1960. CD 9/30.

▲† **S. C., Charleston**—HOUSING—Procurement Officer, Charleston Air Force Base, plans by Lyles, Bissett, Carlisle & Wolff, 1321 Bull St., Columbia, 350 Capehart Housing units, Charleston Air Force Base, $4,500,000. CD 4/27.

▲† **Tex., Fort Sam Houston**—OPERATIONAL FACILITIES, etc.—U. S. Eng., Box 1229, Galveston, operational and training facilities and maintenance facilities, $1,510,500 appropriated. CD 9/16/54.

▲ **Va., Farmville**—LIBRARY, etc.—State of Va., Richmond, library and 219 student dormitory, Longwood College, $1,673,425.

▲ **Va., Fredericksburgh**—COLLEGE—Mary Washington College, college classroom and dormitory, $1,723,000. CD 3/11/55.

▲† **Va., Norfolk**—OPERATIONAL FACILITIES—Dist. P. Wks. Office, 5th Naval Dist., U. S. Naval Base, operational facilities, Naval Communication Station, $1,781,000 appropriated. CD 10/4/50.

▲† **Va., Norfolk**—ACADEMIC AND ADMINISTRATION—P. Wks. Office, 5th Naval Dist., U. S. Naval Station, Norfolk, academic and administration bldg., Air Force Staff College. $4,000,000 appropriated. CD 4/15/58.

▲† **Va., Quantico**—HOUSING—Potomac River Naval Command, Naval Weapons Plant, Wash., D. C., plans by Nathan C. Hale, Assoc., 916 E. Broad St., Falls Church, 450 units Capehart housing, Marine Corps Station. $7,425,000.

▲ **Va., Richmond**—APARTMENT, etc.—Medical College of Virginia, 12th and Broad Sts., apartment, central heating plant addn., renovation bldgs., air-conditioning, $1,070,000.

▲ **W. Va., Sugar Grove**—HOUSING—Dist. P. Wks. Officer, 5th Naval Dist., Norfolk 11, Va., plans by Leif Valand, 2016 Cameron St., Raleigh, N. C., 142 unit Capehart Housing, Naval Radio Research Station. $2,343,000.

▲ **Alta., Calgary**—CITY HALL—City, City Hall, City Hall (A) central collection agency bldg. $1,500,000, (B) office for engineering and other departments $1,000,000, (C) city hall structure in 1962-64 period $1,500,000. Total est. $4,000,000. CD 10/3.

▲ **Alta., Calgary**—POLICE—City, City Hall, plans by J. H. Cook & Assocs., 122-17th Ave. SE., police bldg., 7th Ave. and 2nd St. E. $1,000,000.

▲ **Ont., Ottawa**—LIBRARY—Dpt. P. Wks., Hunter Bldg., plans by Mathers & Haldenby, 10 St. Mary St., Toronto, National Library, Wellington St. Approx. $10,000,000.

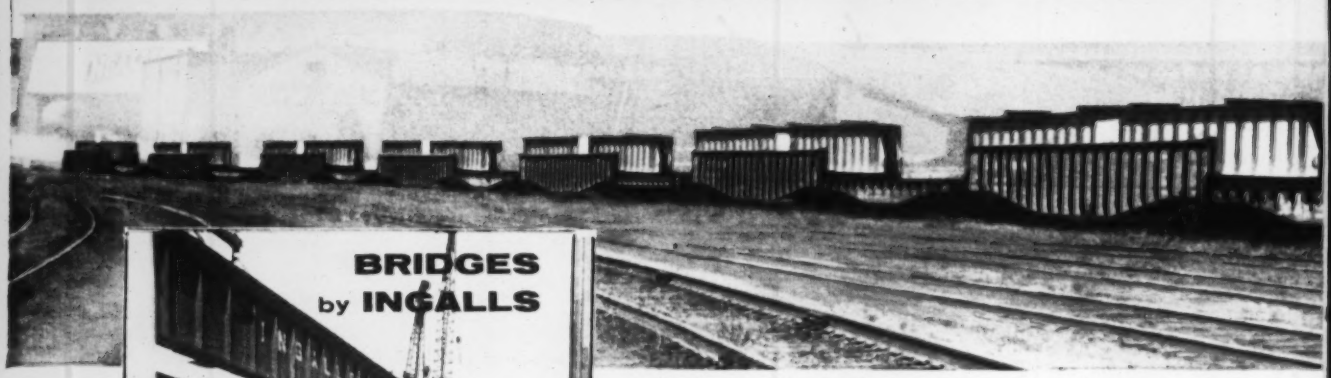
▲ **Ont., Toronto**—SCHOOLS—Toronto Bd. Educ., 155 College St., Davisville Junior Public School, $631,000; Earl Gray Senior Public School addns., $1,340,800; Hodgson Senior Public School addn., $703,400; Metropolitan School for the Deaf, $1,181,000; Queen Alexandra Junior Public School, $865,800; Queen Victoria Junior Public School addn., renovation, $639,000; Riverdale Collegiate Institute addn., $720,469.

COMMERCIAL BUILDINGS

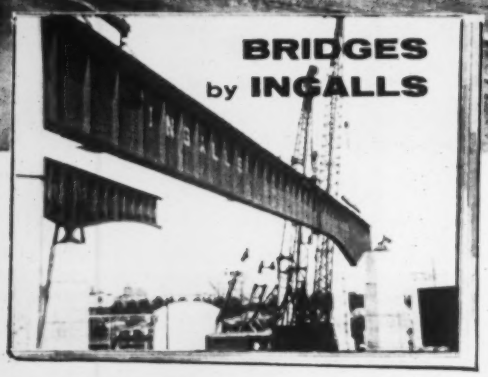
▲ **Ala., Birmingham**—SHOPPING CENTER—H. M. Henderson, c/o Caldwell & Elliott, archts., 2227 20 Ave. S., 100,000 sq. ft. shopping center and professional offices, 900-car parking, East Lake area. $1,750,000.

▲ **Ark., Harrison**—CLUB, etc.—Bull Shoals, Manor 72 suite club, masting rooms, dining rooms, shops, golf course, swimming pool, tennis courts, etc. Hy. 125 on Trimble Arm of Bull Shoals Lae. $2,600,000.

16-CARLOAD "GIRDER EXPRESS"



Contractors: Consolidated Builders Inc.
Engineers: C. A. Maguire & Associates, and Massachusetts Department of Public Works.



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Cargo: 32 Ingalls' steel fabricated bridge girders – each 93′ 3″ in length.

▲ **Calif., Oakland**—OFFICE—Owner: c/o Central Valley National Bank, lessees: 22nd and Broadway; plans by Welton Becket & Assoc., 153 Minden Lane, San Francisco; 3 story, rein.-con. stone office, 20th and Harrison St., incl. parking area. $1,500,000.

▲ **Conn., Bloomfield**—APARTMENTS—Dr. Ralph M. Tovell, et al, 1897 Asylum Ave., West Hartford; 220 units 25 garden apartments, Hall Blvd. $1,100,000. Irving W. Rutherford, 49 Garden St., Hartford, archt.-consult. engr.

▲ **Conn., Hartford**—OFFICE—Hayes & Horn, 170 Sigourney St., 170,000 sq. ft. office, Brainard Field, $1,700,000.

▲ **Conn., Wilton**—HOUSING—School Sisters of Notre Dame, c/o J. Gerald Phelan, archt., 211 State St., Bridgeport, Mother House and Novitate, Belden Hill Rd. $3,000,000. Fletcher Thompson, Inc., 211 State St., Bridgeport, consult. engr.

▲ **Hawaii, Honolulu**—RESIDENTIAL DEVELOPMENT, etc.—George M. Hasegawa, Rm. 970, Alexander Young Bldg., plans by Dennis Slavsky, 1741 Nuuanu Ave., 225 home residential development, shopping center, park and church. $5,000,000.

▲ **Hawaii, Honolulu**—CO-OPERATIVE APARTMENT, Kikiwai Inc., c/o Johnson & Perkins, archts., 2942 Kalakaua Ave., 13 story reinforced prestressed concrete, steel 24 units co-operative apartment. $1,000,000.

▲ **Hawaii, Maili**—HOTEL, etc.—Mokuleia Ranch & Land Co., 325 N. King St., Honolulu; Maili Beach Development, hotel, apartments, shopping center and residential area, Maili Beach, Oahu. $6,000,000.

▲ **Ind., Vincennes**—HOSPITAL—Good Samaritan Hospital, 410 S. 7th St., plans by Schmidt-Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill.; 5 story, 69,739 sq. ft. concrete hospital addn., 410 S. 7 St. $2,400,000.

▲ **La., Baton Rouge**—MOTOR HOTEL—J. D. Blanton, 10108 Harry Hines Blvd., Dallas, Tex., "Tower of Baton Rouge" motor hotel. $1,900,000.

▲ **La., New Orleans**—SHOPPING CENTER—B. L. Mayer, 315 St. Charles Ave., plans by Patrick M. Allison & Assn., 315 St. Charles Ave., one and two level, 198,200 sq. ft. prestressed and precast concrete brick and glass Dona Villa Shopping Center. $2,000,000.

▲ **Md., Gaithersburg**—HEADQUARTERS—Emerson Research Laboratories, 1140 East-West Highway, Silver Spring, headquarters, Shady Grove Rd. and National Pike. $2,000,000.

Md., Wheaton—CHURCH, etc.—Archdiocese of Washington, 1721 Rhode Island Ave. N.W., Wash., D. C.; plans by Johnson & Boutin, 1417 22nd St. N.W., Wash., D. C., church and rectory for St. John's Church, Forest Glenn Rd. and Georgia Ave. $800,000-$900,000. Lutz & Scheibel, 1417 22nd St. N.W., Wash., D. C., consult. engrs.

▲ **Mass., Burlington**—HOSPITAL—R. C. Diocese of Boston, Chancery Office, 1 Lake St., Brighton, hospital, off Rte. 3A. $2,500,000. Constr.: 1960.

▲ **Mass., Worcester**—OFFICE—Owner: c/o Alpers, Bedar & Goodwin, archts., 270 Dartmouth St., Boston, Mass.; office, Lincoln Square. Approx. $1,000,000. Constr. 1960.

▲ **Mich., Detroit**—APARTMENTS, etc.—Thomas Built Homes, J. Panackia, pres., 18256 W. McNichols St., 2 ten story apartments, shopping center, bowling alley. $10,000,000.

▲ **Mich., Temperance**—HOMES—Great Lakes Homes, Inc., Gardner Bldg., Toledo, O., 200 homes, Westchester Village, Sterns Rd. between Jackman Rd. and Lewis Ave., Bedford Twp. $2,500,000.

▲ **Minn., St. Paul**—APARTMENT—740 River Drive, Inc., c/o B. Gingold & Assocs., archts., Metropolitan Bldg., Minneapolis, 23 story, 2 story below ground level, apartment, incl. swimming pool, Highland Parkway and South Mississippi River Blvd. $5,000,000. P. Rogers & Assocs., 62 W. Madison, Chicago, Ill., structural engrs.; L. D. Freeland, Metropolitan Bldg., Minneapolis, mechanical engr.

▲ **N. J., Caldwell**—SCIENCE WING, DORMITORY, etc.—Dominican Sisters of Caldwell College, Bloomfield Ave., plans by Robert Moran, 17 Dartmouth Rd., West Orange, science wing and dormitory. $1,500,000; infirmary, Caldwell College, $1,000,000. CD 10.1.

▲ **N. J., Madison**—YWCA HEADQUARTERS—Young Men's Christian Asso., 16 Main St., plans by Building Bureau of Nat'l. Council, 291 Broadway, New York, N. Y.; YWCA headquarters; Keep St. and Kings Rd., $1,115,000.

▲ **N. J., Ringwood**—HOUSES—H. J. Gerlich Co., 45 Church St., Paterson; Erskine Lakes, Ringwood houses, roads, utilities. $6,000,000.

▲ **N. J., West Orange**—SHOPPING CENTER—Essex Green Shopping Plaza, 61 Mall Wk., Yonkers, N. Y., plans by Lathorp Douglass, 518 Fifth Ave., New York, N. Y., (for center) and Arthur Lynas, 535 Fifth Ave., New York, N. Y., (for Arnold-Constable), 100,000 ft. Essex Green Shopping Center addn., incl. Arnold Constable store on Prospect Ave. $1,000,000.

▲ **N. Y., New York**—APARTMENT—Realty Equities Corp., c/o H. I. Feldman, archt., 415 Lexington Ave., Zone 17, 14 story apartment, 216-220 East 67th St. $1,000,000.

▲ **N. Y., New York**—APARTMENT—Helen Schmincke, c/o Paul Resnick and Harry F. Green, archts., 654 Madison Ave., Zone 21, 15 story apartment, 102-108 E. 34th St. and 228-230 Lexington Ave. southwest corner. $2,250,000.

▲ **N. Y., New York**—APARTMENT—Sherman Towers, Inc., 654 Madison Ave., New York, Zone 21, plans by S. J. Kessler & Sons, 551 Fifth Ave., New York 17, N. Y., 20 story apartment, 361-69 East 76th St. $1,900,000.

▲ **N. Y., New York**—SCHOOL, etc.—Temple Emanu-El, 1 East 65th St., plans by Kahn & Jacobs, 2 Park Ave., religious school and auditorium, E. 66th St. between Fifth and Madison Aves. $3,000,000.

▲ **N. Y., New York**—LIBRARY—United Nations, East 42nd St. and 1st Ave.; New York, N. Y., plans by Harrison & Abramowitz, 630 5th Ave., 6 story, marble and glass library, East 42nd St. and 1st Ave. $6,000,000.

▲ **O., Cincinnati**—MOTEL—Cincinnati Realty Corp., 8348 Vine St., plans by Thomas Landise, Jr., 7023 Miami Ave., Madeira, 4 story, 84 unit glass, aluminum, precast concrete motel, Main St. $1,000,000. Hixson Tarter Assoc., 2306 Park Ave., engr. CD 6.9.

▲ **O., Cincinnati**—HOSPITAL—Jewish Hospital, Burnet Ave., plans by Potter, Tyler, Martin & Roth, 128 E. 6th St., 9 story hospital, $2,000,000; nurses home $1,500,000. Ziel & Blossom, Gwynne Bldg., consult. engrs. Constr. 1961 or 1962. CD 9.5.59.

▲ **O., Cincinnati**—HOSPITAL—St. Mary's Hospital, 816 Betts, plans by Potter, Tylor, Martin & Roth, 128 E. 6th, 6 story, bsmnt., 250-bed hospital, $4,500,000. Blossom & Ziel, Gwynne Bldg., consult. engrs. CD 2.14.57.

▲ **O., Columbus**—HOSPITAL—Mount Carmel Hospital, 739 W. State St., plans by Schmidt, Garden & Erikson, 104 S. Michigan, Chicago, Ill., 4 story, 35,000 sq. ft. hospital addn. $1,200,000.

▲ **O., Dayton**—HOMES—Spring Brook Development Co., 24 N. Jefferson, 180 homes along Springboro Pike, near Alexandersville-Bellbrook Rd. $4,000,000.

▲ **O., Mentor**—HOMES—Owner, c/o Yorktown Constr. Co., Society for Savings Bldg., Cleveland, Zone 14, 322 homes, Center and Munson Sts., to be known as Woodland Park Subdivision. $4,700,000.

▲ **O., North Ridgeville (Br. Elyria)**—HOMES—Ridge Plaza Development Co., 6919 Root Rd., 68 addnl. homes, Ridge Plaza. $1,275,000.

▲ **Okla., Tulsa**—SHOPPING CENTER—Holiday Hills Shopping Center, c/o Cecil Stanfield, archt., 3611 S. Harvard St., 2 story masonry shopping center incl. offices. $1,000,000.

▲ **Pa., Phila.**—HOTEL—Sheraton Corp. of America, 1 Court St., Boston, Mass., 15 story hotel renovation, 19th St. and Rittenhouse Square. $1,000,000.

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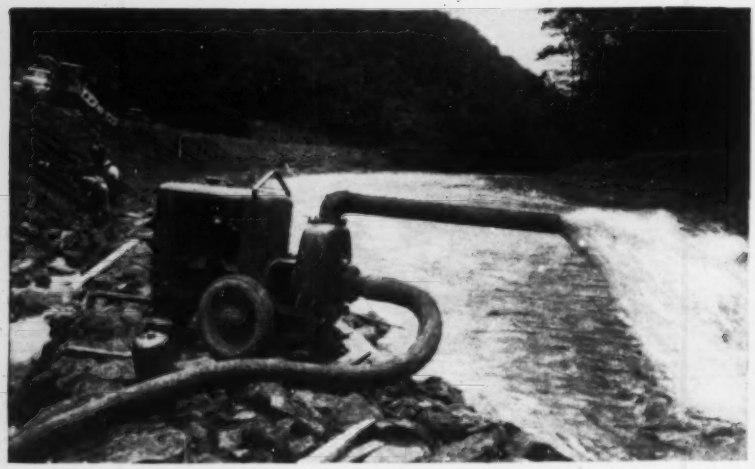

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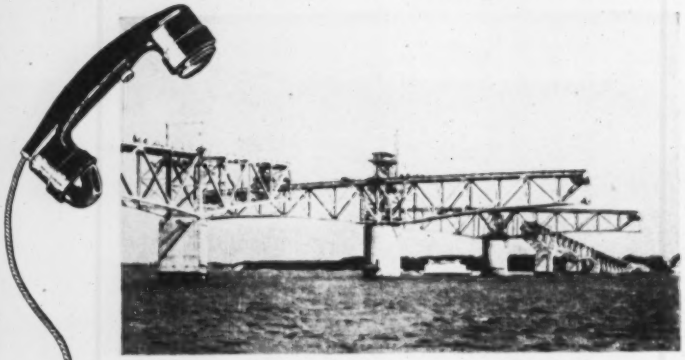

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▲ **Pa., Phila.**—HOTEL REHABILITATION—Vine-Wood Realty Corp., Broadwood Hotel Broad and Wood Sts., Broadwood Hotel rehabilitation and modernization incl. air-conditioning, $1,000,000.

▲ **Tenn., Memphis**—MOTEL—Harry Bloomfield & Assocs., 3355 Poplar St., plans by Wiseman & Bland, Shrine Bldg., 6 story with 10 story tower Casa del Rio Motel, 444 car offstreet parking, with 100 parking areas underground, 2 swimming pools, $2,500,000.

▲ **Va., Alexandria** — APARTMENT — Seminary Assocs., c/o Joseph Saunders, archt., 3636 King St., 296 unit garden type apartment, Seminary Rd. and Shirley Highway, $2,250,000. Holland Engineering 120 N. Pitt St., consult. engr.

▲ **Ont., Sarnia**—MARKET—Owner, c/o D. B. White & Sons, Ltd., 366 N. Christina St., 200 x 572 ft. market and parking area bounded by Victoria, Lochiel, Cromwell and Vida Sts. $2,000,000. S. G. Chipman & Co., Ltd., 234 Queen's Ave., London, consult. engrs.

▲ **Que., Amos**—JUVENAT AND BOYS SCHOOL—Les Clercs de St. Viateur, La Ferme, Abitibi Co., plans by Auguste Martineau, 10 rue McQuaig Est, Rouyn, juvenat and boys' school, $1,000,000.

▲ **Sask., Regina**—HEADQUARTERS OFFICE—Saskatchewan Power Corp., 1745 Cornwall St., plans by Joseph Pettick, 1124 Albert St., 12 story headquarters office, underground garage, $4,000,000. W. B. Clipsham, c/o owner, asst. mgr. Bids late fall.

INDUSTRIAL BUILDINGS

▲ **Calif., San Jose**—PLANT—United Research Corp., Subsidiary United Aircraft Corp., 400 Main St., East Hartford, Conn., plans by Ralph M. Parsons Co., archts.-consult. engrs., 617 W. 7th St., Los Angeles, development and test plant for basic space and missile research principally in field of propellants in Hamilton Mountains, 12 mi. east of here, $3,500,000. CD 9/17.

▲ **Conn., Hartford**—WAREHOUSE, etc.—Hayes & Horn, 170 Sigourney St., 200,000 sq. ft. warehouse, Brainard Field, $2,000,000; 180,000 sq. ft. mfg. bldg., Brainard Field, $1,600,000; 12,000 sq. ft. industrial bldg., Fort Brainard Field, $120,000.

▲ **Fla., St. Petersburg**—POWER PLANT—Florida Power Corp., 101 S. 5 St., 2nd unit Bartow Power Plant, Weedon Island, $10,000,000.

▲ **Tex., Houston**—COFFEE PLANT—Duncan Coffee Co., 1200 Carr St., plans by Neuhaus & Taylor, 2710 Danville St., masonry concrete coffee plant $3,250,000, water sys. $60,000, site earthwork $57,500, sanitary-storm sewers $120,000, area and auto paved center $100,000, Katy Rd., west of here. CD 4/25/57.

▲ **Tex., Seadrift**—PLANT—Union Carbide Corp., 30 E. 42 St., New York, N. Y., polyethylene plant addn. to existing plant, $3,000,000.

▲ **Tex., Texas City**—PLANT—Union Carbide Corp., 30 E. 42 St., New York, N. Y., polyethylene production plant addn. $3,500,000. CD 9/9/55.

▲ **Ont., Waterloo**—PLANT—Marshland Engineering Ltd., Kitchener, 1 story, 100,000 sq. ft. electronics plant, $1,000,000.

UNCLASSIFIED

▲ **Calif., San Francisco**—BOAT HARBOR EXPAN., etc.—San Francisco Recreation & Park Comn., McLaren Lodge, Fell and Stanyan Sts., small boat harbor expan. and launching facility at Yacht Harbor, Foot of Scott St. $2,000,000. CD 11/13/47.

▲† **Fla., Mayport**—RECREATIONAL FACILITIES—Dpt. P. Wks., 6th Naval Dist., Bldg. 13, Charleston, S. C., outdoor and indoor recreational facilities, officers mess, enlisted men's club, petty officers mess, Naval Auxiliary Air Station, $1,323,000.

▲ **Fla., Orlando**—PARKS, etc—City, City Hall, parks and beaches, $1,154,700.

▲‡ **Me., Jonesport**—OPERATIONAL FACILITIES, etc.—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., operational, maintenance, supply, community and administrative facilities, ground improv., Radio Naval Station, Washington Co. $3,179,000 appropriated. CD 9/8/58.

▲† **Mass., Charlestown**—MAINTENANCE FACILITIES—First Naval Dist., 495 Summer St., Boston, maintenance facilities, Naval Shipyard, $1,422,000 appropriated. CD 3/18/57.

▲ **Mich., Detroit**—TRANSIT SHED, etc.—Detroit Harbor Terminals, Inc., Foot Clark St., transit shed and marine office, $4,000,000.

▲ **Mich., Detroit**—SHIP BERTHS—Todd Steel Corp., Div. Century America Co., 370 Midland St., Highland Park, two ships berths, Detroit River, $2,500,000.

▲‡ **N. H., Portsmouth**—OPERATIONAL FACILITIES, etc.—Dist. P. Wks. Office, 1st Naval Dist., Bldg. 37, 495 Summer St., Boston, Mass., operational and maintenance and production facilities, Naval Shipyard, $3,497,000 appropriated.

▲‡ **R. I., Newport**—OPERATIONAL FACILITIES—First Naval Dist., 495 Summer St., Boston, Mass., operational facilities, Naval Station, $7,353,000 appropriated. CD 8/27/56.

▲‡ **Tenn., Tullahoma**—RESEARCH, DEVELOPMENT, etc.—U. S. Eng., Tullahoma, research, development and test facilities, utilities, Arnold Engineering Development Center, $5,690,000 appropriated. CD 11/16/54.

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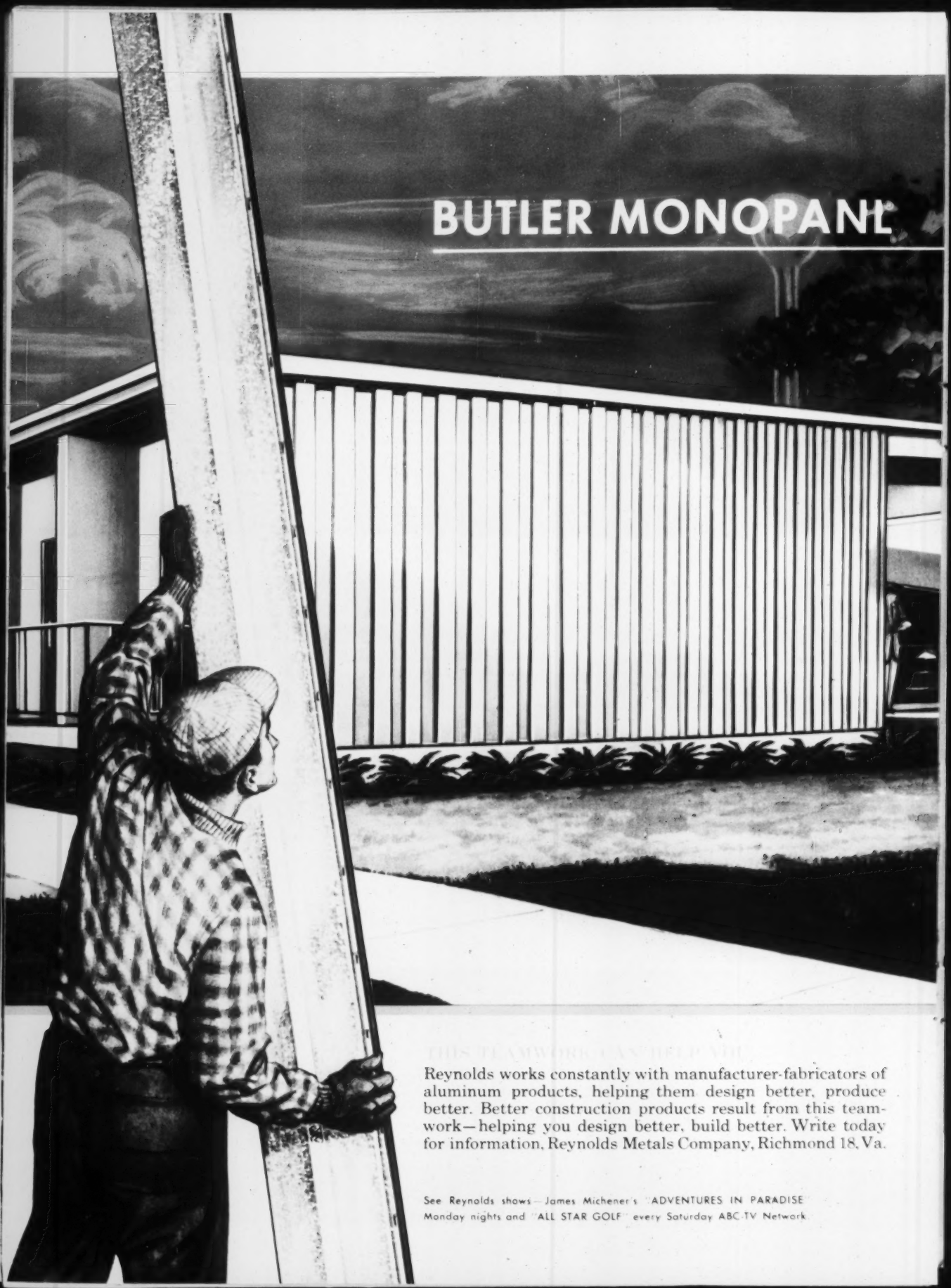

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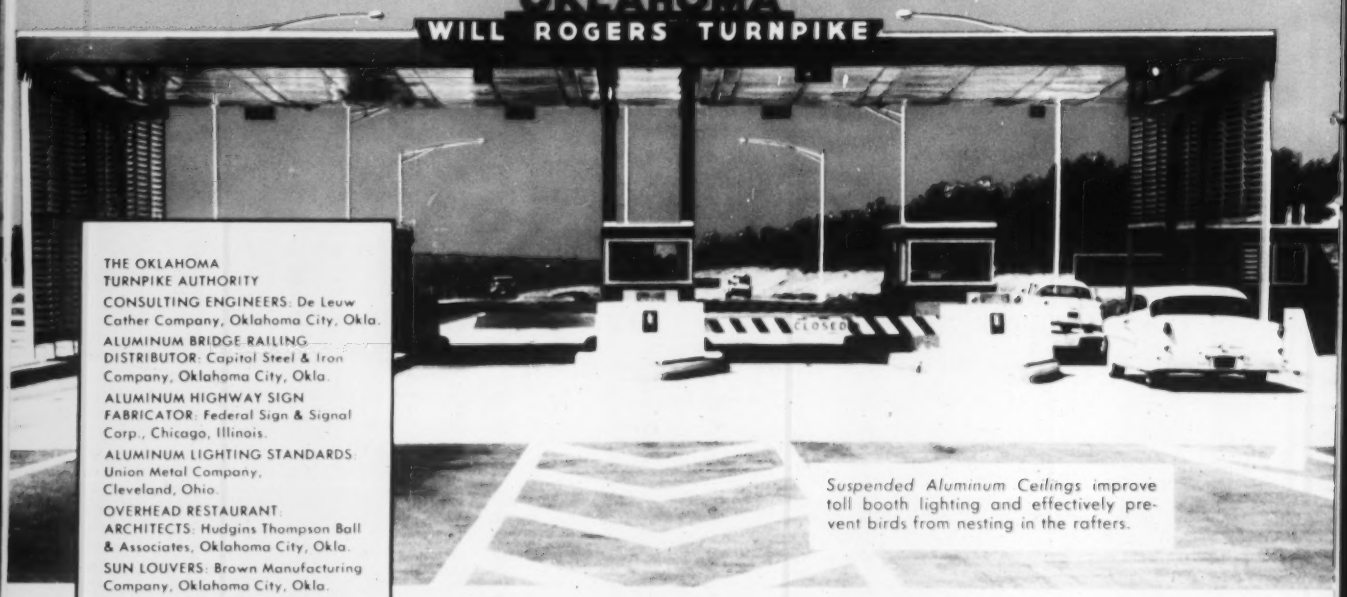

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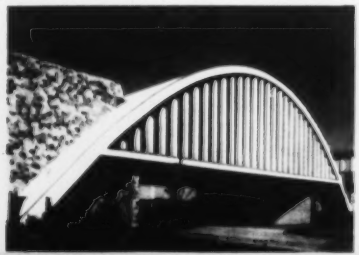


Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 30 Vermont

BUILDINGS—BA

Mass., Worcester—DORMITORY—BA 10/20—Assumption College, 670 W. Boylston St., men's dormitory. Approx. $620,000. Plans deposit $50. O. E. Nault & Sons, 340 Main St., archts. CD 12/11.

▲ **Conn., Manchester**—SCHOOL—BA 1/27—Archdiocese of Hartford, Chancery Office, 140 Farmington Ave., Hartford, high school, Hilliard St. $1,500,000. Wilkins & Stecker, 945 Asylum Ave., Hartford, archts. Henri B. Van Zelm & Assocs., 1007 Farmington Ave., West Hartford, engrs. Loomis & Loomis, 252 Broad St., Windsor, structural engrs. CD 1/8.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford.

Oneglia & Gervasini, Inc., Casson Ave., Torrington, Conn., CA $3,376,638, c. conc. paving 3,619 lin. ft., incl. 5 bridges relocation Rte. U. S. 6 and c. conc. paving 855 lin. ft., incl. 3 bridges relocation Rte. U. S. 7, Fed. Aid Projects 1-34-1 (4) 3 and F-30-8, Projects 34-103 and 34-105, Danbury. Bids Aug. 31. CD 9/2, under LB.

BUILDINGS—LB & CA

Poley-Abrams Corp., 2 Elm Pl., Brookline, Mass., CA Est. $650,000, SHOPPING CENTER, Elm and Main Sts., NORTH WOBURN, MASS. Edward P. Gilgun & Frederick & Agnes Bowser, 379 Main St., Woburn, Mass. Salsberg & LeBlanc, 318 Harvard St., Brookline, Mass., archts. CD 10/6.

Keystone Constr. Co., Inc., 148 State St., Boston, Mass., CA $638,000, ELEMENTARY SCHOOL, Johnson Rd. and Ridge St., WINCHESTER, MASS. Town, Supt. Schools, 426 Main St., Winchester, Mass. Bids Sept. 18. CD 9/23, under LB.

James A. McCarthy, Inc., 66 Vernon St., Manchester, Conn., Owner Builds, $570,000, 30 HOUSES, "Deming Gardens," Deming St., SOUTH WINDSOR, CONN. CD 9/1.

Est. of Selena S. Young, Et. Als., 1 Atlantic St., Stamford, Conn., Owner Builds, $560,000, 56 HOUSES, Proposer Rds. extending south from Woodway Rd., SPRINGDALE, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 30 Pennsylvania
STREETS AND ROADS
October 21, 28 New Jersey October 30 Pennsylvania

BUILDINGS—BA

▲ **Md., Bel Air**—SCHOOL—BA 10/20—Bd. Educ. Harford Co., 1 story, 100,000 sq. ft., steel frame, brick, concrete Junior High School. $1,500,000. Plans deposit $50. Fisher, Nes & Campbell & Assocs., 2120 N. Charles St., Baltimore, Zone 8, archts.

▲ **N. Y., Freeport**—SCHOOL—BA 10/29—Bd. Educ. Union Federated School Dist. No. 9, Town of Hempstead, Freeport High School, general contract, heating and ventilating, plumbing and sanitary, electrical work Leo F. Giblyn School, Miller Ave., Cedar St. and South Ocean Ave. Plans deposit $50. Frederic P. Wiedersum Assocs., 65 Roosevelt Ave., Valley Stream, archts. CD 6/9.

▲ **N. Y., Albany**—BUILDING NO. 9—BA 11/18—Henry A. Cohen, dir. Bureau Contracts, State Office Bldg., Specs. Nos. 1549-C, general contract, 15492-H, heating, 15492-S, sanitary, 14592-E, electric, 14592-EL, elevator, 15492-MS moving stairway and 15942-CO, conveyor work for Building No. 9 State Office Bldg. Campus site on behalf of New York State Employees' Retirement System. Plans deposit $50 general, $40 each heating and electric, $20 sanitary, $15 elevator, $30 moving stairway, $10 conveyor.

HEAVY CONSTRUCTION—LB & CA

▲ **L. I. Waldman & Co., Inc.**, 40-01 29th St., Long Island City, N. Y., LB $1,541,900 (11 bidders), electrical work at Lewiston Power Plant, Lewiston, Niagara Co., Spec. No. PA-N-25031, Niagara Contr. No. N22, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Oct. 6. CD 9/3.

▲ **George Tripp, Inc.**, 3260 Elizabeth Lake Rd., Pontiac, Mich., CA $2,057,154, Section D-25, D1 & D2 only, 8- to 24-in. sanitary sewers for Gates-Chili-Ogden Sewer District, ROCHESTER, N. Y. Monroe County Sewer Agency, 406 Terminal Bldg., 65 Broad St., Rochester, N. Y. Bids July 16. CD 8/5, under LB.

Neptune Contg. Co., 193 N. California Ave., Atlantic City, N. J., CA $699,243, boardwalk redecking, rebuilding pavilions, Roosevelt Ave., ATLANTIC CITY, N. J. City Comrs., City Hall, Atlantic City, N. J. CD 8/3, under LB.

† **Orndorff Constr. Co., Inc.**, Camp Hill, Pa., LB $608,806, est. $779,591, general constr. visitors center bldg. and cyclorama, Gettysburg National Park, PENNSYLVANIA. Gettysburg National Military Park, Dpt. Interior, Gettysburg, Pa. Neutra & Alexander, 2379 Glendale Blvd., Los Angeles, Calif., archts. Parker-Zehnder & Assoc., 2379 Glendale Blvd., Los Angeles, Calif., engrs. Bids Sept. 29. CD 9/11.

MARYLAND—State Rd. Comn., 300 W. Preston St., Baltimore, Zone 3.

Williams Constr. Co., Middle River, Baltimore 20, Md., CA $536,119, grading, drainage, paving section Pocomoke Thruway US 13-S-177-1-120 & WO-306-1-120, Somerset and Worcester Counties. Bids Aug. 4. CD 8/12, under LB.

Verona Constr. Co., 2511½ Grove Ave., Verona, N. J., LB $592,192, (12 bidders), Contr. 2082-W, water main Seven Locks Rd. to Wisconsin Ave. and from Viers Mill Rd. to Grandview Ave., Rockville, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., 4107 Hamilton St., Hyattsville, Md. Bids Oct. 5. CD 9/22.

BUILDINGS—LB & CA

F. D. Rich Co., 550 Summer St., Stamford, Conn., CA $559,329, 64-unit Arthur Albright Courts HOUSING addn. to Colin Kelly Heights Development, TONAWANDA, N. Y. City Housing Auth., Tonawanda, N. Y. CD 8/12, under LB.

Lewis C. Bowers & Sons, Inc., 341 Nassau St., Princeton, N. J., CA Est. $650,000, four 1 story, 77,920 sq. ft. STORAGE, WAREHOUSE, PLANT and GATEHOUSE, ELIZABETHPORT, N. J. Singer Mfg. Co., 107 Trumbull St., Elizabeth, N. J. Fulmer & Bowers, 341 Nassau St., Princeton, N. J., archts. (Correction—name of contractor and architects). CD 9/21, under CA.

Harold Hartstein & Monroe Koggan, 156 Ewingville Rd., Trenton, N. J., Separate Contracts, $510,000 RESIDENTIAL DEVELOPMENT, Lawrenceville-Pennington Rd., HOPEWELL, N. J.

R. A. Prendergast & Son, 3010 Sunset Ave., Atlantic City, N. J., CA $1,001,524, general contract Regional HIGH SCHOOL, LINWOOD, N. J. Mainland Regional High School Bd., Pleasantville, N. J. CD 10/2, under LB.

▲ **Belli Co.**, 2127 Hamilton Ave., Trenton, N. J., CA $1,750,000, OFFICE, parking area, Montgomery St., TRENTON, N. J., Looman Assocs., c/o Kramer Hirsch & Carchide, archts., 115 W. State St., Trenton, N. J. State Motor Vehicles Division, lessee.

Salem-Brosius, Inc., Arch St. Exten., Carnegie, Pa., CA Est. over $500,000, 700 tons per day BEEHIVE COKE OVENS, FARRELL, PA. Carpentertown Coal & Coke Co., Sub. Sharon Steel Corp., Union Trust Bldg., Pittsburgh, Pa.

▲ **Cogswell Constr. Co.**, 513 Park Ave., Baltimore 1, Md., CA $2,215,307, brick, limestone, concrete, steel, block CATHOLIC HIGH SCHOOL for Boys, Sinclair Lane and Erdman Ave., BALTIMORE, MD. Catholic Diocese of Baltimore, 408 N. Charles St., Baltimore 1, Md. Bids Sept. 22. CD 9/29, under LB.

Philip Vizzini & Son, 818 N. Franklintown Rd., Baltimore 16, Md., LB $593,022, (6 bidders), brick, concrete, steel, block CHILDREN'S HOME, Rockdale, BROOKLANDVILLE, MD. Methodist Bd. of Child Care, 519 N. Charles St., Baltimore 1, Md. Bids Sept. 29. CD 10/2.

▲ **S & L Corp.**, Palmer Ave. and Memorial Drive, Wilmington, Del., Separate Contracts, $1,500,000, RESIDENTIAL DEVELOPMENT (127) Palmer Ave., etc., WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 20 South Carolina
STREETS AND ROADS
October 20 South Carolina, West Virginia
October 21, November 11 Louisiana

BUILDINGS—BA

▲† **Tenn., Oak Ridge**—POWER PLANT—BA 12/21—Atomic Energy Comn., P.O. Box E, pressurized water nuclear power plant. Gibbs & Hill, Inc., Penn Station, New York, N. Y., engr. CD 9/30.

▲ **Tenn., Nashville**—PLANT, etc.—Bids Asked—Ford Motor Co., American Rd., Dearborn, Mich., 274,000 sq. ft. plant addn., Glass Div., incl. 2 melting furnaces, storage and shipping bldg. Giffels & Rosetti, Marquette Bldg., Detroit, Mich., engrs.

BUILDINGS—SLC

Fla., Miami—BANK, etc.—2765 S. Bayshore Corp., 3430 Main Highway, Coconut Grove Bank, soon lets contract bank and office, 2765 South Bayshore Dr. Weed-Johnson-Assocs., 550 Brickell Ave., archts. Jorgensen & Schreffler, 1200 SW 1 St., structural engrs. CD 10/7.

HEAVY CONSTRUCTION—LB & CA

▲ **GEORGIA**—State Rd. Dpt., 2 Capitol Square, Atlanta. Bids opened 10/2.

Ga.—**Southern Roadbuilders, Inc.**, Box 1129, Augusta, Ga., LB $2,100,519, c. conc. and bit. paving, 1 double stream bridge and 3 single highway grade separation structures 6.398 mi. Valdosta-Atlanta Interstate Rte. I-75-1 (21), Dooly Co.;

Ga.—**W. L. Cobb Constr. Co.**, Box 410, Decatur, Ga., LB $1,902,990, 24 ft. and 44 ft. b. conc. paving new bridge, widening 1 bridge and bridge culvert, 17.936 mi. F-024-1 (4) SR 41 Meriwether and Coweta Counties;

Ga.—**G. H. Law Constr. Co.**, Gainesville, Ga., LB $495,075, grading, surf. tr., paving and 1 bridge and 2 bridge culverts Helen Baldwin Rd. S-1759 (1) CR, White and Habersham Counties. CD 9/29.

▲ **FLORIDA**—State Rd. Dpt., Holland Bldg., Tallahassee.

Ballenger Paving, Inc. & Structures, Inc., Box 927, Greenville, S. C., CA $3,317,779, limerock base Type 1 b. conc. surf. course with limerock base Type 1 b. conc. surf. course with binder course limerock base shoulder Type 1A surf. Type 1 concrete box culvert bridge, 5.723 mi. SR 400, FAI Proj. No. 1-4-1 (17) 46 Job No. 16320-3401, Polk Co., CA $1,384,716, 4-lane divided limerock base with Type 1 b. conc. surf. course and binder course limerock base shoulders with Type 1-A surf. tr., etc. SR 400 FAI Proj. No. 1-4-1 (18) 52 Job No. 16320-3402, Polk Co. Bids July 28, awarded Oct. 6. CD 7/31, under LB.

▲† **Paul Smith Co.**, 4936 Kuhl Ave., Orlando, Fla., CA $2,090,090, Space Systems Launch Complex 36, Cape Canaveral Missile Center, Patrick Air Force Base, ENG-08-123-60-9, COCOA, FLA. U. S. Eng. 575 Riverside Ave., Box 4970, Jacksonville, Fla. Bids Sept. 22, awarded Oct. 5. CD 9/29, under LB.

KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort.

McDade & McDade, Moors St., Fulton, Ky., CA $628,816, grade, drain on main line 4.152 mi. Mayfield-By-Pass Rd. from US 45 to north of north corporate limit of Mayfield F 144 (7), SP 42-598, Graves Co. Bids Aug. 21. CD 8/27, under LB.

BUILDINGS—LB & CA

▲ **William S. Farris**, 514 Rhode Island Ave. N.E., Wash., D. C., Owner Builds, $2,000,000. Kamp Washington SHOPPING CENTER, Intersection Rtes. 50, 29-211 and 236, FAIRFAX, VA. Edmund W. Dreyfuss & Assocs., 1019-15th St. N.W., Wash., D. C., archts.

▲ **Gilbane Constr. Co.**, 90 Calverly St., Providence, R. I., CA $1,000,000, HILLTOP SHOPPING CENTER, NORFOLK, VA. S. L. Nusbaum & Co., Inc., 148 Granby St., Norfolk, Va. Bernard Spigel, Kresge Bldg., Norfolk, Va., archt.

Mottley Constr. Co., Farmville, Va., CA $957,020 RECEIVING BLDGS., Eastern State Hospital, WILLIAMSBURG, VA. State Hospital Bd. Comn. of Virginia, 9 N. 12th St., Richmond, Va. Leary & Cicci, 1 E. Main St., Richmond, Va., archts. MacFarland & Sadler, 408 E. Grace St., Richmond, Va., engrs.

Heftler Constr. Co., 4102 NW 183 St., Miami, Fla., Owner Builds, $700,000, 103 RESIDENCES, Carol City-Lake Steven, Carol City, MIAMI, FLA. Gerber, Pancani & Crump, DuPont Plaza Center, Miami, Fla., archts.

▲ **Delta Constr. Co.**, P.O. Drawer 257, Waycross, Ga., CA $1,025,000, HOSPITAL, WASHINGTON, GA. Wilkes Co. Hospital Auth., Washington, Ga. Bids July 30. CD 8/5, under LB.

Girdler Constr. div. Chemetron Corp., Commonwealth Bldg., Louisville, Ky., CA $500,000, PLANT to produce 325,000 cu. ft. 99.6 per center purity hydrogen daily, MEMPHIS, TENN. Wesson Oil & Snowdrift Co., Inc., 1351 Williams St., Memphis, Tenn.

F. T. Thayer, Jr., 189 Scott St., Memphis, Tenn., LB $548,323 (9 bidders), CLASSROOM, Memphis State University, MEMPHIS, TENN. State Bldg. Comn., Memphis, Tenn.

Melson Contractors, Shelbyville, Tenn., CA $587,108, Two Rivers HIGH SCHOOL, NASHVILLE, TENN. Davidson County Bd. Educ., Bransford Ave., Nashville, Tenn. Awarded Oct. 2. CD 5/15.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 23 Illinois October 27 Indiana
STREETS AND ROADS
October 23 Illinois October 27 Indiana, Wisconsin

HEAVY CONSTRUCTION—LB & CA

Charles N. Bohrer, 2174½ East 2 St., Centralia, Ill., CA $789,700, sewerage and WW addns., Group II, IV, and V, CARBONDALE, ILL. City, City Hall, Carbondale, Ill. Bids Sept. 15. Grand total $926,196. CD 10/6, under LB;
Triangle Constr. Co., Carbondale, Ill., CA $136,496, Group III, (Carbondale, Ill.).

Santucci Constr. Co., 5025 Church St., Skokie, Ill., CA $676,525, est. $775,000, No. 80.82-59-29 combination sewers, Beverly-Calumet sys., Contr. 2-D, 106 St., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Aug. 14, awarded Sept. 30. CD 8/20, under LB.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., CA $1,599,681, est. $1,900,000, 9 x 11½ mono. concrete and 60 in. concrete pipe combined sewers, Union Ave., No. 80.82-59-28, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Aug. 18, awarded Sept. 30. CD 8/21, under LB.

BUILDINGS—LB & CA

▲ **Brune-Harpenau Builders, Inc.**, 6457 Glenway, Cincinnati, O., Owner Builds, **$2,950,000**, 209 one fl., bsmntless brick HOUSES, Anderson Ferry Rd. and Delhi Park; **$725,000**, 43 one fl. bsmnt., brick frame HOUSES, Sunridge Ave. off North Bend Rd., CINCINNATI, O. Jos. Allen, 5555 Glenway Ave., Cincinnati, O., engr.

Krowlton Constr. Co., Box 254, Bellefontaine, O., CA **$775,900**, REHABILITATION CENTER FACILITY, Ohio State University, COLUMBUS, O. Ohio Dpt. P. Wks., State Dept. Bldg., Columbus 15, O. Bids July 30. CD 8/24, under LB.

▲ **The Andersons, Illinois Ave.**, Maumee, O., Owners Forces, **$1,300,000** (½ of project) GRAIN STORAGE BINS, 10 million bu. GRAIN STORAGE FACILITY at present site, MAUMEE, O.;
Sapulpa Tank Co., Sapulpa, Okla., CA **$1,300,000** (½ of project) 10 million bu. GRAIN STORAGE FACILITY (Maumee, O.).

Peterson Constr. Co., Wapakoneta, O., CA Est. **$550,000** general contract WOMEN'S DORMITORY and DINING HALL, TIFFIN, O. Heidelberg College, Tiffin, O. Bellman, Gillett & Richards, 1600 Madison Ave., Toledo 2, O., archts.-engrs. CD 10/6.

▲ **MacDonald Engineering Co.**, 22 W. Madison, Chicago, Ill., CA **$850,000** design and construct 500,000 bu. elevator-transfer GRAIN ELEVATOR, 8 acre site, west bank Maumee River between New York Central and Old Fassett St. Bridges, TOLEDO, O. The Anderson, Illinois Ave., Maumee, O. Awarded Sept. 23;
A. Bentley & Sons, 201 Belmont, Toledo, O., CA **$400,000**, 1,050 ft. waterfront dock work, incl. sheet steel bulkheading, piles, etc. for grain elevator (Toledo, O.).

▲ **Carlson Ried Builders**, Cline and Chicago Aves., Gary, Ind., CA **$1,049,610**, SCHOOL, EAST GARY, IND., East Gary School Corp., 2295 Parke Ave., East Gary, Ind. Bids Sept. 8, awarded Sept. 30. CD 9/16, under LB.

▲ **Mourek & Son, Inc.**, 3128 S. Austin Blvd., Cicero, Ill., CA **$1,425,000** FACTORY addn., CHICAGO, ILL. Woodwork Corp. of America, 1414 24 W. 21 St., Chicago, Ill. Edward Steinborn, 176 W. Adams St., Chicago 3, Ill., archt. Awarded Oct. 1.

Ragnar Benson Inc., 4744 W. Race St., Chicago, Ill., CA **$850,000**, 100x407 ft. WAREHOUSE and OFFICE, 4841 S. California Ave., CHICAGO, ILL. Anheuser-Busch Co., Inc., 721 Pestalozzi St., St. Louis, Mo. Swerdrup & Parcel, Inc., Syndicate Trust Bldg., St. Louis, Mo., archt. Awarded Oct. 1.

▲ **B. W. Handler Constr. Co.**, 223 W. Jackson Blvd., Chicago 6, Ill., CA **$1,100,000**, 83,000 sq. ft., structural steel WAREHOUSE and OFFICE, 401 Touhy Ave., DES PLAINES, ILL. Interstate Steel Co., 2100 Greenwood Ave., Evanston, Ill. Awarded Oct. 1. Richard M. Barancik, 332 S. Michigan Ave., Chicago 4, Ill., archt.

Power Constr. Co., 125 S. Marion St., Oak Park, Ill., CA **$815,758**, Goster and New Central Grade SCHOOLS, Deway and Foster Ave., Main St. and Elmwood Ave., EVANSTON, ILL. Bd. Educ. School Dist. 65, 1323 Hinman Ave., Evanston, Ill. Bids Sept. 9, awarded Oct. 21. CD 10/1, under LB.

Mazzucco Constr. Co., 1800 Plainfield Rd., Joliet, Ill., CA **$529,000**, 1 story, 86 x 260 ft. 75 x 87 ft., brick, Reed GRADE SCHOOL and Ludwig GRADE SCHOOL addn., LOCKPORT, ILL. Ludwig School Dist. 92, State St., Lockport, Ill. Awarded Oct. 1. CD 1/2.

▲ **Mercury Builders, Inc.**, 761 S. Harlem Ave., Forest Park, Ill., CA **$1,525,971**, HIGH SCHOOL, Quentin Rd. and Illinois Blvd., PALATINE, ILL. Palatine Twp. High School, Palatine, Ill. Bids Sept. 3, awarded Oct. 1. CD 9/21, under LB.

▲ **Miller, Davis & MacDonald, Inc.**, 1029 Portage St., Kalamazoo, Mich., CA **$1,672,000**, STUDENT CENTER, Northern Michigan College, MARQUETTE, MICH. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. CD 8/18, under LB.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES

October 20 Colorado, Iowa October 22, 23 Kansas
October 27 Missouri, Oklahoma

STREETS AND ROADS

October 20 Colorado, Iowa October 22, 23 Kansas
October 23 Minnesota October 27 Missouri, Oklahoma

▲† **Kansas**—BA 11/3—U. S. Eng., P.O. Box 61, Tulsa, Okla., first stage embankment constr., John Redmond dam near Burlington, Grand (Neosho) River, Strawn Reservoir, CIVENG-34-066-60-25. CD 9/28.

BUILDINGS—BA

Mont., Helena—OFFICE—BA 10/28—Bd. Examiners, Capitol Bldg., 4 story, bsmnt., 56x120 ft., rein.-con. office for State Unemployment Compensation Commission. $600,000. Plans deposit $25. Evans & Lamont, Electric Bldg., Billings, archts.

Tex., Denton—MUSIC—BA 10/29—North Texas State College, 2 story, 53,000 sq. ft. masonry, brick music bldg. $800,000. Plans deposit $40. Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, archts. CD 6/23.

▲ **Minn., Stillwater**—HOSPITAL—BA 11/1—Lakeview Memorial Hospital, 929 W. Anderson St., hospital with three circular units, $1,200,000. Ellerbe & Co., 333 Sibley St., St. Paul, archts. CD 9/11/58.

BUILDINGS—SLC

▲ **Mo., St. Joseph**—HOSPITAL—Missouri Methodist Hospital, c/o Dr. O. J. Carder, Hospital Administrator, soon lets contract 3 story, bsmnt., 140 x 159 ft., concrete block, brick, steel frame hospital. $1,250,000. Cooper, Robinson, Carlson, O'Brien, 418 Commerce Bldg., Kansas City, Mo., archts. CD 9/23.

HEAVY CONSTRUCTION—LB & CA

KANSAS—State Hy. Comn., Great Bend,
Stannard Constr. Co., Inc., 519 S. Broadway, Suite 6, Wichita 2, Kan., CA **$615,466**, concrete paving 6.711 mi. SP 54-8 F 038-3 (23), Butler Co. Bids Oct. 1. CD 10/8, under LB.

BUILDINGS—LB & CA

Chris Hansen Constr. Co., 1615 E. 7th St., Sioux City, Iowa, CA **$749,788**, MEN'S DORMITORY, WAYNE, NEB. State Teachers College, Wayne, Neb. Bids July 15. CD 8/5, under LB.

Amarillo Housing, Inc., Washington St., Amarillo, Tex., Owner Builds, **$578,100**, 60 DWELLINGS, Seminole Woodland and Fairfield Sts., AMARILLO, TEX. CD 9/23.

Cooper Constr. Co., 1600 Currie St., Amarillo, Tex., Owner Builds, **$521,000**, 62 DWELLINGS, 26th St. N. Vernon Pinion, Beaver Sts., AMARILLO, TEX. CD 9/24.

▲ **John W. Phillips, Contractor, Box 3653**, Corpus Christi, Tex., CA **$1,000,000**, SEMINARY, CORPUS CHRISTI, TEX. Diocese of Corpus Christi, c/o Wade, Gibson & Martin, archts., 1101 S. Brownlee St., Corpus Christi, Tex. CD 10/7.

Inwood Constr. Co., Box 1371, Dallas, Tex. CA Est. **$750,000**, 84,491 sq. ft. Grand OL' TEXAS BUILDING, DALLAS, TEX. City, State Fair of Texas, c/o Fair Park Grounds, Dallas, Tex. Bids Sept. 16. CD 9/30, under LB.

H. A. Lott, Inc., 6101 Hillcroft St., Houston, Tex., CA **$513,000**, Base Bid, 2 story Booker T. Washington ELEMENTARY SCHOOL, PORT ARTHUR, TEX. Port Arthur Ind. School Dist., Port Arthur, Tex. CD 10/19/55.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

November 4, 5, 13, 19 California

BUILDINGS—BA

▲ **Calif., Los Angeles**—COLLEGE—BA 10/30—Bd. Educ., 1425 S. San Pedro St., Phase 2, Type 1, rein.-con. Pierce College Addn., 6201 Winnetka St., Woodland Hills. $4,000,000. Risley & Gould, 2502 West 3rd St., archts. CD 6/9/58.

▲ **Calif., San Mateo** — HOSPITAL — BA 11/2 — Mills Memorial Hospital, 95 S. El Camino Real (selected list of bidders) 2 story hospital modernization, expansion. $1,650,000. John Lord King, 244 Kearny St., San Francisco; archt. Isadore Thompson, 133 Kearny St., San Francisco, engr. CD 8/12/58.

Ariz., Phoenix—SCHOOLS—BA 11/23—Bd. Supervs., Maricopa Co., 3 schools, Glendale Union High School Dist. Glendale. Bids Sept. 14 rejected. LB **$1,481,368**. CD 9/18 under LB.

Ore., Eugene—SCHOOL—BA 11/17—Eugene School Dist., Spencer Butte Junior High School. $700,000. Hayslip, Tuft, Hewlett & Jamison, 2040 SW 3, Portland, archts. CD 10/31/55.

HEAVY CONSTRUCTION—LB & CA

ARIZONA—State Hy. Comn., 206 S. 17 St., Phoenix,
Mohamed Earthmoving Contractor, 2620 S. 24 St., Phoenix, Ariz., CA **$937,090** grade drain, S. M. aggregate base, b. conc. and emulsified asph. seal coat Ehrenburg-Phoenix Hy., 1.3 mi. each quartzsite on U. S. Rte. 60-70 and extending E. over new align of 60-70 for 5.7 mi. Yuma Co. Bids Sept. 25, awarded Oct. 5. CD 9/30, under LB.

BUILDINGS—LB & CA

† **A. V. Petersen Co.**, 2827 N. E. Glisan St., Portland, Ore., LB **$989,900** HOSPITAL alterations, PORTLAND, ORE. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Sept. 29, (correction, Low Bidder) CD 10/5, under LB.

▲ **Tolboe & Harlin Constr. Co.**, 3091 S. Main St., Salt Lake City, Utah, CA **$2,893,439**, erection 299 APARTMENTS for Married Student Housing, University of Utah, SALT LAKE CITY, UTAH. Utah State Bldg. Bd., 419 State Capitol, Salt Lake City, Utah. CD 8/26, under LB.

R. F. L. Constr. Co., P. O. Box 1623, Fresno, Calif., LB **$742,300** (5 bidders), 140 bed, 40,000 sq. ft., concrete block frame HOME for the AGED, Heaton and Winery Sts., FRESNO, CALIF. Twilight Haven Inc., 2208 E. California Fresno, Calif. Robert W. Stevens, 924 N. Van Ness Blvd., Fresno, Calif.; archt.

N. T. Lewis Co., P. O. Box 637, Hayward, Calif. LB **$645,275**, (9 bidders), Base Bid, 40,000 sq. ft. Garfield ELEMENTARY SCHOOL, 1640 22nd Ave., incl. gymnasium, OAKLAND, CALIF. Oakland Bd. Educ., 1025 2nd Ave., Oakland, Calif. Donald S. Macky, 1444 Webster St., Oakland, Calif., archt. CD 6/8/56.

▲ **Bennett Enterprises**, 735 Industrial Rd., San Carlos, Calif., CA EST. **$1,000,000**, 80,000 sq. ft. SHOPPING CENTER, Coast Hy. across from exist. Linda Mar Shopping Center, PACIFICA, CALIF. Owner, c/o Dale Farnow Realty Co., 1379 Linda Mar Shopping Center, Pacifica, Calif.

▲ **Haas & Haynie Co.**, 244 Pine St., San Francisco, Calif., CA **$2,500,000**, 3 story, steel frame, glass exterior CENTRAL MEDICAL BLDG. Homer Ave. and Channing Way, PALO ALTO, CALIF. Palo Alto Medical Clinic, c/o Clark, Stormquist, Potter & Ehrlich, archts., 3200 Hanover St., Palo Alto, Calif. CD 7/28.

▲ **Barrett Constr. Co.**, 1800 Evans Ave., San Francisco, Calif., CA Est. **$3,000,000**, 4 levels, 60x350 ft. Mount Alverno NOVITIATE AND RETREAT HOUSE, 38 acre site, Farm Hills Area, REDWOOD CITY, CALIF. Sisters of St. Francis of Penance & Christian Charity, 250 Oak Grove Ave., Menlo Park, Calif. Gene Verge & R. N. Clatworthy, 4342 Eagle Rock, Los Angeles, Calif., archts. Bids July 10. CD 7/17 under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS

October 21, 28 Ontario October 22 British Columbia
October 29 Yukon Territories

BUILDINGS—SLC

▲ **Ont., Sarnia**—RESEARCH—Imperial Oil Ltd., 445 Christina St. S., soon lets contract 3 story, bsmnt., 131 x 70 ft., rein.-con. research bldg. $1,000,000. Shore & Moffat, 51 Wellington St. W., Toronto, archts.

HEAVY CONSTRUCTION—LB & CA

Bennett & Forster Ltd., 11239-83rd St., Edmonton, Alta., CA **$720,076**, steel, concrete 105th St. overpass, EDMONTON, ALTA. City, City Hall, Edmonton, Alta. Bids Aug. 19, awarded Oct. 1. CD 8/27, under LB.

MANITOBA—Manitoba Govt., Winnipeg,
Nelson River Constr. Ltd., 101 Dawson St., Winnipeg, Man., CA **$926,070**, surf. Hy. No. 4 from Shoal Lake to Foxwarren. Awarded Oct. 1.

▲ **S. McNally & Sons Ltd.**, Box 157, Postal Station C, Hamilton, Ont., CA **$1,865,000**, storm relief sewers, Contracts "A" and "B", LONDON, ONT. City, City Hall, London, Ont. Bids Sept. 21, awarded Oct. 2. CD 9/29, under LB.

J. G. Fitzpatrick Ltd., 5151 Western Ave., Montreal, Que., CA **$635,905**, extensions to shed, Sections 62-65, Montreal Harbor, MONTREAL, QUE. National Harbours Bd., West Block, Parliament Bldgs., Ottawa, Ont. Awarded Oct. 2. CD 8/26, under LB.

▲ **Omego Constr. Co. Ltd.**, 655 Cote des Neiges Rd., Montreal, Que., LB **$1,144,000**, excavation, foundations water-proofing and plumbing works for fingers, tunnels and aeroquay for Air Terminal Bldg. Montreal Airport, Dorval, MONTREAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Oct. 1. CD 9/14.

BUILDINGS—LB & CA

Bennett & White Alberta Ltd., 1120 9 Ave. S. W., Calgary, Alta., CA **$877,858**, JUNIOR and SENIOR HIGH SCHOOL, 20 St. and 9 Ave. N., LETHBRIDGE, ALTA. Lethbridge School Dist. No. 51, Lethbridge, Alta. Bids Sept. 3. CD 9/3.

Pearson Constr. Ltd., 1019 Erin St., Winnipeg, Man., CA **$679,451** (4 bidders), ARTS AND LIBRARY, BRANDON, MAN. Brandon College, Brandon, Man. Bids Aug. 14, awarded Sept. 28. CD 8/4.

Barker Constr. Ltd., 100 St. Lucie Drive, Weston, Ont., CA **$836,494**, (8 bidders), 100 ROW HOUSING UNITS LONDON, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. Bids Sept. 10, awarded Oct. 2. CD 9/15, under LB.

▲ **Kuhl Constr. Ltd.**, 121 Richmond St. W., Toronto, Ont., CA Est. **$2,915,000**, 14 story, rein.-con. L-shaped, 279 suite APARTMENT, Ontario and Howard Sts., TORONTO, ONT. Barbara Apartments Ltd., c/o Julius Kuhl, 121 Richmond St. W., Toronto, Ont. CD 5/28, under Valera Apartments Ltd. as owner.

Desourdy Constr. Ltee., 3350 Blvd. Laurier, Lafleche, Que., LB **$970,991** (7 bidders), 4 story, bsmnt. CENTRE MARIAL, incl. retreat house, residence church, etc., MONTREAL, QUE. Rev. Peres Montfortains, Maison Provinciale, 5637 Stirling St., LaSalle, Montreal, Que. Bids Oct. 1. CD 9/21.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **SYRIA**—BA 12/15—Chemin. of Major Projects Bd. of Syria, Damascus,
railway bridge Orontes River, 500-600 meters in length and diversion exist. railway lines to approaches near Harb-Nefse, for El-Ghab Proj. Administration.

AMERICANS ABROAD

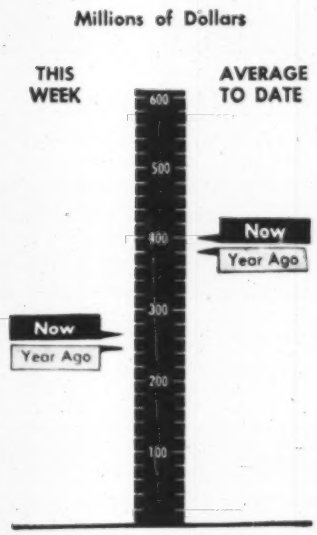
HEAVY CONSTRUCTION—LB & CA

▲ **Fluor International S. A.** (Fluor Corp. Ltd., 2500 S. Atlantic Blvd., Los Angeles 22, Calif., U. S. A.) and **Utah Australia Ltd.** (Utah Constr. Co., 144 Broadway, Salt Lake City 1, Utah, U. S. A.) CA Est. **$10,000,000**, SYNTHETIC RUBBER PLANT, near Altona, AUSTRALIA. Australian Synthetic Ruber Co. Ltd.; (Vacuum Oil Co. Pty Ltd. a sub. of Standard Vacuum Oil Co., White Plains, N.Y., U. S. A. Fluor Corp. Ltd., 2500 S. Atlantic Blvd., Los Angeles 22, Calif., U. S. A. engrs.

(Proposal Advertisements see p. 165 to 167)

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

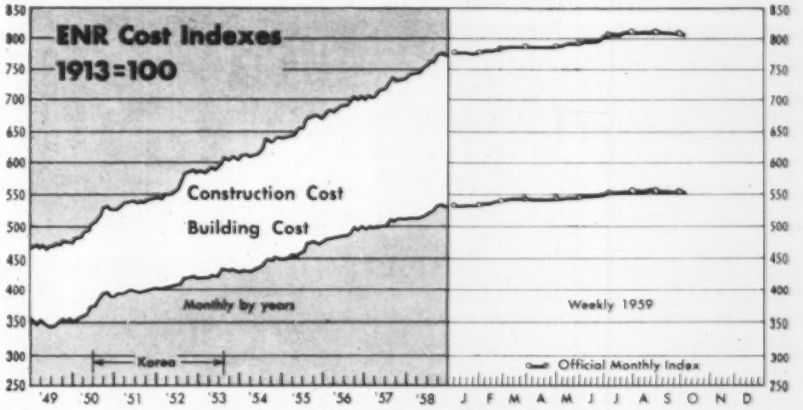
	This Week	Cum. 42 wks 1959	Chge '58-'59 %
	millions		
All Heavy Constr.	$264.3	$16,777.4	+4
By Ownership			
PRIVATE	145.4	8,404.4	+29
PUBLIC	118.9	8,373.0	−13
State & Municipal	110.6	6,052.1	−15
Federal	8.3	2,320.9	−8
By Type of Work			
PUBLIC			
Waterworks	3.6	323.7	+25
Sewerage	10.8	528.7	+6
Bridges*	7.8	601.6	+1
Highways	36.7	2,425.9	−19
Earthworks, Dams & Waterways	4.8	730.6	−19
Buildings:			
Excl. Housing	35.2	2,133.3	−4
Housing	13.1	525.0	−46
Unclassified	7.5	1,114.7	−8
PRIVATE			
Buildings:			
Mass Housing	74.0	3,776.2	+20
Commercial	29.2	1,780.5	+15
Industrial	36.4	2,415.2	+64
Unclassified	5.2	422.0	+19

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of Oct. 8	Cum. 41 wks 1959	Chge '58-'59 %
	millions		
Corporate Securities	$225.7	$3,055.2	−29
State and Municipal:			
All Except Housing	110.1	4,764.8	−7
Housing		75.2	−34
Federal Loans		112.3	−31
Federal Aid		3,107.2	+20
Total Nonfederal	$335.8	$11,114.8	−10
Federal Appropriations:			
Projects in U. S.		$3,564.1	−16
Outside U. S.		4.4	−90
Total New Capital	$335.8	$14,683.3	−12



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 8 1959	% Change from Sept. 10 1959	% Change from Oct. 9 1958
Construction Cost	810.83	−0.20	+4.61
Building Cost	554.90	−0.14	+3.46

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

CONTRACTS AWARDED

	1959 Sept. (millions)	1959 9-Mos. (millions)	% Change from 1958 Sept.	% Change from 1958 9-Mos.
Total U. S., ENR reported	$1,538.1	$15,863.2	+14	+5
Private	960.9	7,934.3	+135	+30
Public	577.2	7,928.9	−39	−11
State and Municipal	462.9	5,736.3	−43	−13
Federal	114.2	2,192.6	−12	−8
ENR Volume Index, 1913=100	545	569	+1	+1

NEW CONSTRUCTION CAPITAL

Total U. S.	$3,848.6	$14,205.8	+14	−11
State and Municipal Bond Sales	294.6	4,665.7	−49	−6
Corporate Security Sales	147.9	2,753.1	−61	−34
Federal Loans, Aid (nonfederal work)	265.5	3,218.5	−89	+17
Federal Appropriations (federal work)*	3,140.6	3,568.5	+1,305	−10

*Includes funds for outside U. S.

MATERIALS SHIPMENTS

	Unit	1959 June(Jn) July (Jl) Aug.(Ag)	Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Cum.
Portland Cement, Bur Mines	thous bbls	36,836(Ag)	225,303(8)	+8	+16
Concrete Paving Awards, PCA	thous sq yd	6,971(Ag)	70,413(8)	−38	−16
Fabricated Structural Steel	thous tons	220(Ag)	2,110(8)	−26	−16
Bookings, AISC	thous tons	197(Ag)	2,068(8)	−13	+14
Reinforcing Bars, Net, AISI	thous tons	142(Jl)	1,570(7)	−19	+33
Lumber, NLMA	mil fbm	3,137(Ag)	24,399(8)	+2	+10
Orders	mil fbm	3,020(Ag)	24,253(8)	−3	+10
Production	mil fbm	3,171(Ag)	24,019(8)	+5	+11
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	737.4(Jn)	3,483.9(6)	+19	+23
Vitrified Clay Sewer Pipe	thous tons	194.9(Jn)	917.2(6)	+13	+20
Structural Tile, Unglazed	thous tons	50.9(Jn)	261.6(6)	+3	+3
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	6,162.6(Jl)	33,473.3(7)	+8	+3
Asphalt Siding	thous sales sqs	88.0(Jl)	504.1(7)	−2	−5
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	144.7(Jl)	801.2(7)	+70	+51
Wire and Cable	mil lbs	39.9(Jl)	194.4(7)	+62	+25
Extruded Shapes (soft alloys)	mil lbs	99.0(Jl)	533.8(7)	+58	+43

EMPLOYMENT AND FAILURES

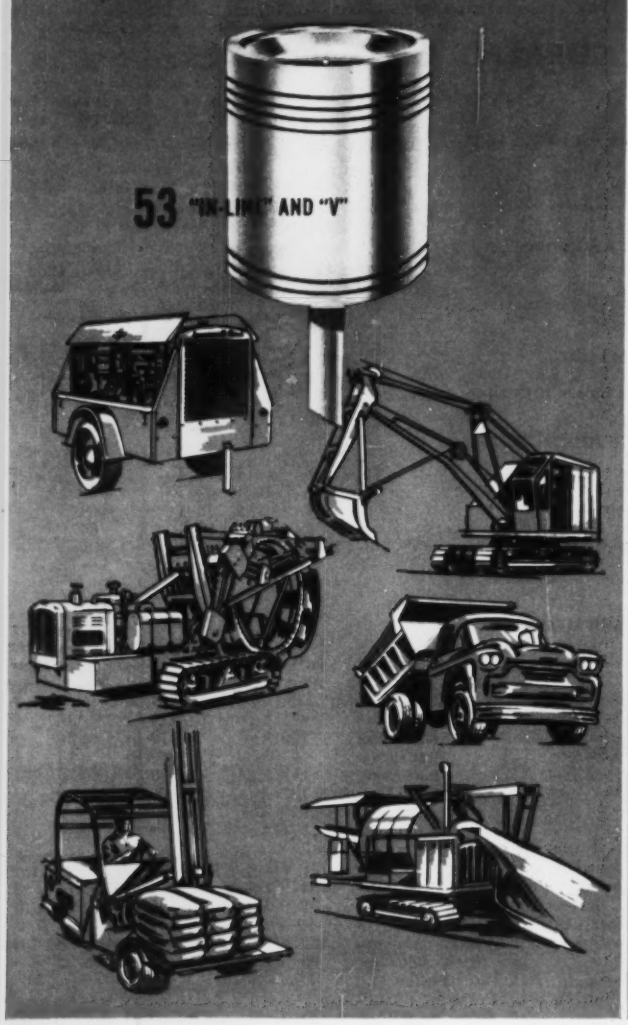
Contract Const Employment, BLS	thous	3,127(Ag)	2,708( )**	+6	+5
Contractor Failures, Dun & Bradstreet					
Number		181(Ag)	1,360(8)	+15	−8
Liabilities	thous	$12,061(Ag)	79,567(8)	+39	−2

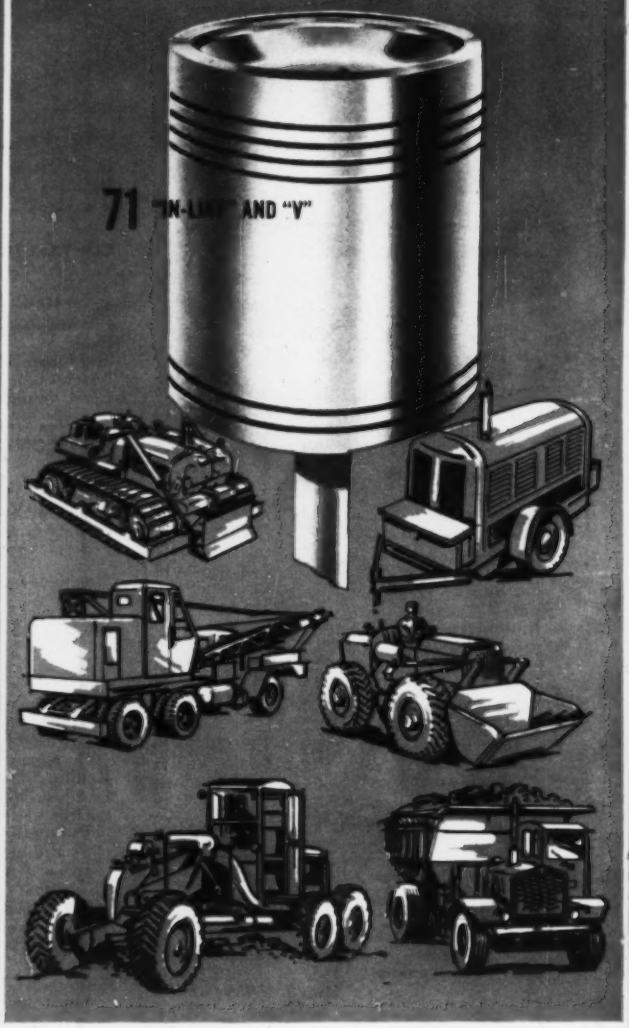
**Average per month.

CONTRACTORS SAVE MONEY BY STANDARDIZING ON THE

all purpose

(20 TO 1650 H.P. IN





THE GM DIESEL ALL-PURPOSE POWER LINE
20 to 1650 H.P.
in only 3 cylinder sizes

NON-TURBOCHARGED RATINGS

NEW

"2-53"
20 to 47 H.P.

"2-71"
33 to 67 H.P.

NEW

"3-53"
38 to 97 H.P.

"3-71"
51 to 118 H.P.

NEW

"4-53"
51 to 130 H.P.

"4-71"
69 to 167 H.P.

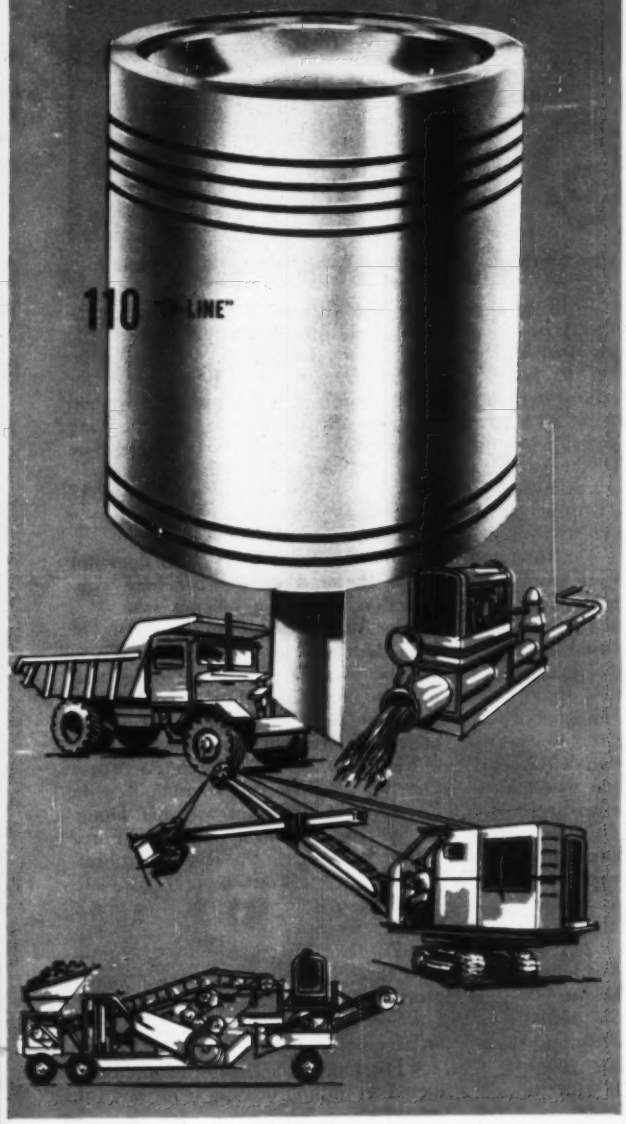
NEW

"6V-53"
76 to 195 H.P.

"6-71"
112 to 252 H.P.

power line

ONLY 3 CYLINDER SIZES)



"Jimmy" Diesel parts... highest interchangeability ...lowest cost

Looking to shave your costs and boost your profits? Then take a close look at the savings you'll make when you standardize on the GM Diesel All-Purpose Power Line—particularly when it comes to buying parts.

For instance, when you buy a cylinder kit assembly (rings, pistons, liner, piston pin) for a "Jimmy" you'll save $40.97 over engine "A," $26.84 over Diesel "B" and $12.39 over engine "C."

And when you buy from your GM Diesel distributor you get parts of the highest quality with latest improvements designed and built to keep your "Jimmy" running right.

Or take parts stocks. A "Jimmy" fleet works with fewer spare parts than any other Diesel for one simple reason—highest parts interchangeability. In fact, three cylinder sizes cover the entire power range from 20 to 1650 H.P.—many parts for a 33 H.P. GM Diesel also fit a 1650 H.P. "Jimmy."

What's more, a "Jimmy" gives you a smaller, lighter Diesel with more guts and go than any other engine.

Add up the score—power, price, parts, performance—and you get only one answer: *It pays to standardize on "Jimmy" Diesel power.* Why don't you?

***Only* your GM Diesel Distributor has all the latest genuine "Jimmy" parts**

GM DIESEL

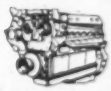
DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

NEW
"6V-71"
112 to 252 H.P.

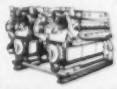
NEW
"8V-71"
150 to 334 H.P.

"6-110"
160 to 335 H.P.



NEW
"12V-71"
224 to 504 H.P.

NEW
"16V-71"
300 to 675 H.P.



NEW
"24V-71" (Twin 12)
448 to 1008 H.P.

NEW
"32V-71" (Twin 16)
600 to 1350 H.P.
(Turbocharged—1650 H.P.)

Black Friday at Bong AFB

A brief telegram to the Chicago District Corps of Engineers this month brought $33 million worth of construction to a dead stop, immobilized thousands of dollars worth of construction equipment, threw several hundred workmen out of jobs and left seven contractors in a big, deep hole.

All this happened when, for reasons of economy and strategy, the Air Force canceled the $80-million Richard I. Bong Air Force Base, near Kenosha, Wis. (ENR Oct. 8, p. 17).

Most of the contractors counted on the Bong job to keep their staffs and equipment busy for two years. With this in mind, they hadn't been bidding on other contracts. If they are lucky enough to land other jobs now, it will take them several expensive weeks to transfer their personnel and facilities.

Subcontractors invested a lot of money gearing up for a large-scale project, only to have it disappear October 2, their Black Friday.

Workmen at Bong AFB expected to get six more weeks of work before cold weather shut down most of the operations. Now they are out of work, with little chance to get full-time jobs on other construction this fall. Most of those jobs are staffed to finish the season. Many of the workmen had moved to Bong from other areas, expecting a job that would last two more seasons.

The seven contractors had been pushing hard at the project, working seven days a week. More than $15 million worth of work was already finished. Ironically, they expected to complete the Strategic Air Command base ahead of schedule.

The construction companies are entitled to "a reasonable allowance for profit" under the termination clause of the specifications. They have two years in which to file their claims. Before they leave Bong, however, they have to do whatever the Corps of Engineers thinks is necessary to restore the area to near-normal condition. This will involve bulldozing earth into excavations, pulling down partly completed buildings and completing the drainage system to the point where rains will not flood the area.

Equipment and materials stand forlornly in the pale autumn sun on the plains where Bong was to be built. There's hardly a human being around.

S. J. Groves & Sons Construction Co., Springfield, Ill., had a work force of 256 on $23 million worth of contracts. This dwindled to 65 in a few days and it will get even smaller.

Runway paving was just about to start when Bong AFB was cancelled.

Groves was signed up to build a 14,300-ft runway, taxiways aprons and other paving jobs. It bought its biggest piece of equipment especially for the Bong job. It's a $200,000 batching plant designed to turn out enough concrete to keep eight two-drum pavers going. The plant has yet to turn out its first yard of concrete. Ten thousand tons of gravel and sand are stockpiled.

The Five Boro Construction Co., New York City, had just started on $5 million worth of personnel buildings when the Air Force pulled the rug out from under them. Within three days, the only man left of a 50-man staff was the project engineer.

C. & C. Construction Co., Fort Wayne, Ind., had 85 men working on $2 million worth of sewage and water plants and a hot water distribution system. The crew was abruptly cut to eight persons. The company has installed some 5,000 lin ft of 10-in. high pressure water line that has doubtful salvage value.

More than $50,000 worth of materials are spread about the site awaiting installation, including 65,000 lb of uncut and unformed reinforcing bars. These can be resold, but 100,000 lb of rebars have been cut and formed.

James H. Douglas, Secretary of the Air Force, says construction was halted at Bong because of "military considerations in the light of expanding research" and the need to keep Air Force spending from spiraling in 1960-1961.

When the base was planned five years ago, it was scheduled to serve jet-fighter-interceptors that would defend the Chicago-Milwaukee area.

When intercontinental ballistic missiles came into the strategy picture, the Air Force decided to eliminate the fighters from Bong AFB and use it for B-58 bombers. Recently, Pentagon planners realized that by the time Bong AFB was completed, the B-58s could be served by bases already built.

The Air Force is eliminating B-47 bombers from several bases and putting in supersonic B-58 jet bombers.

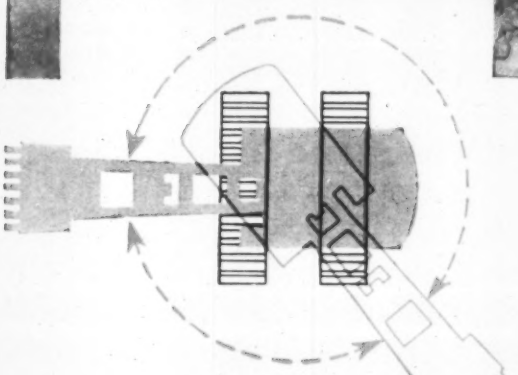
Cancellation of Bong AFB does not mean the end of bomber base construction, Pentagon officials say.

The Air Force is adding two wings of B-52 bombers to its strength. These will be handled at existing bases that must be modified and extended to serve the huge B-52s and will be the source of considerable construction work.

Maj. Gen. A. M. Minton, Air Force Director of Civil Engineering, flew to Racine, Wis., last week with Mr. Douglas to explain what the Air Force planned to do with the abandoned base. He said the Air Force will:

- Replace stockpiled topsoil on about 1,700 acres.
- Put back in their original condition three highways that had been removed to make way for the base.
- See if some use could be made of an access road built on the base.
- Dismantle the base's nearly completed $1-million heating plant and use it at another base.
- Cover foundations for a sewage treatment plant and a dormitory with topsoil.
- Leave it to the local community to decide whether to put topsoil on the already graded runway area or to leave it as it is for possible later use for a commercial airport.

(B&F continued p. 155)



DIGS.. SWINGS.. and LOADS from "STAND-STILL" position

Full-revolving . . . free-swinging . . . Koehring SKOOPER gives you big-bucket digging and loading *without* the usual drive-in back-out waste motion of tractor front-end loaders . . . *without* the high track or tire maintenance of skid-turn operation. Follow SKOOPER through a typical dig-swing-dump-return cycle . . . check its *economy of motion*:

Powerful action of twin hydraulic rams crowds the 2-yard bucket along a smooth 7-foot level clean-up from *"stand-still"* position . . . or cuts at any angle of bank slope. Next, SKOOPER swings . . . dumps load fast, clean from roll-over bucket . . . then swings back, starts next cycle . . . *all without traveling.* Or . . . at any time, SKOOPER can swing and travel simultaneously . . . work with crawlers parallel to cut, or headed into bank. You also get 3 types of interchangeable buckets (rock, re-handling, general-purpose) . . . ample dumping height . . . *plus* excavator-crane convertibility. Call your Koehring distributor *today.*

Mail to: KOEHRING Division, 3026 W. Concordia, Milwaukee 16, Wisconsin

Send us: ☐ bulletin ☐ specification sheet on revolutionary new SKOOPER

NAME ..... TITLE .....

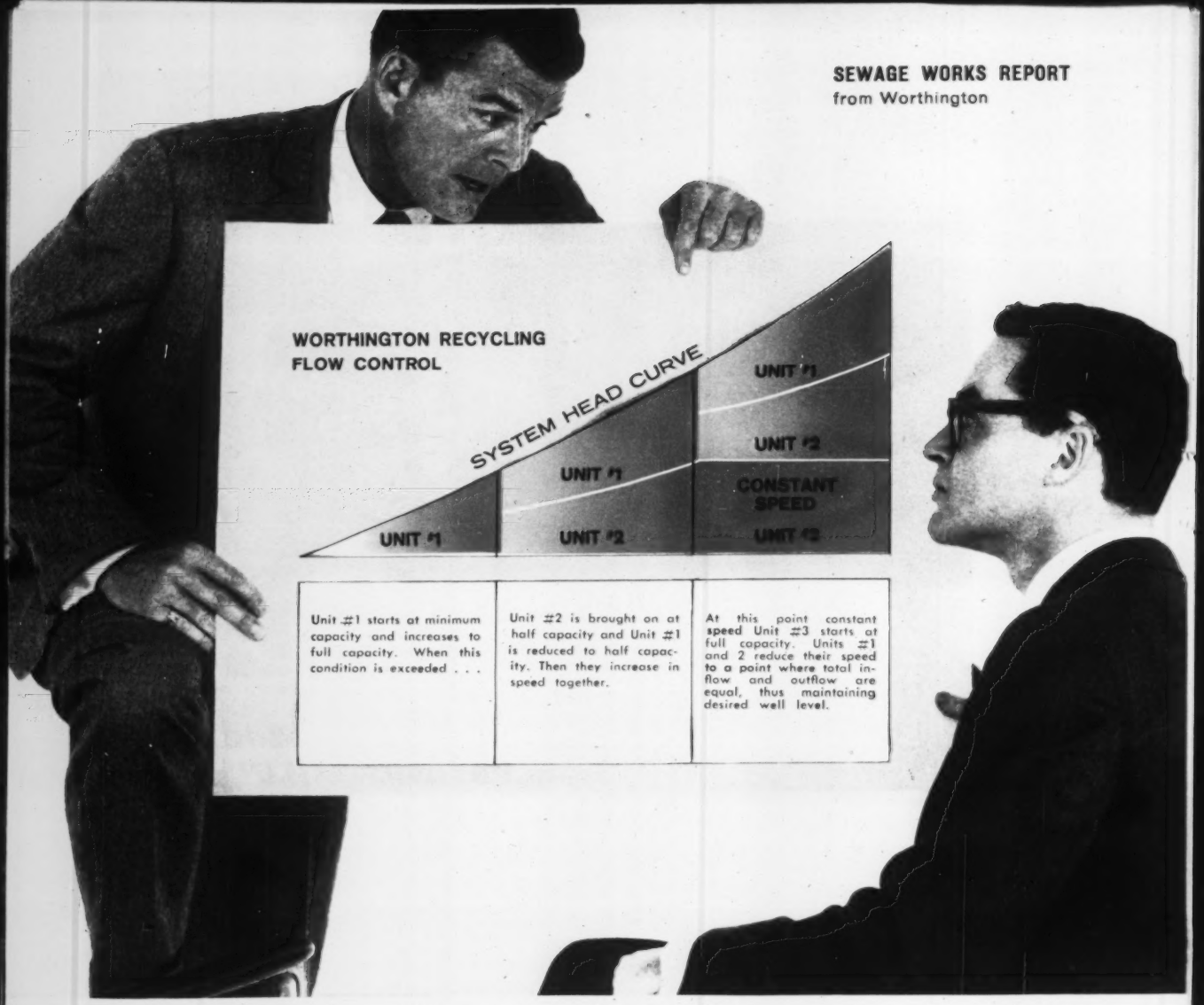
COMPANY ..... DEPARTMENT .....

STREET ..... CITY, STATE .....

ENR K903

KOEHRING DIVISION OF KOEHRING COMPANY • Milwaukee 16, Wis.

SEWAGE WORKS REPORT
from Worthington


WORTHINGTON RECYCLING
FLOW CONTROL
SYSTEM HEAD CURVE
UNIT #1
UNIT #2
CONSTANT SPEED
UNIT #3
UNIT #1
UNIT #2
UNIT #1
UNIT #2
UNIT #3
Unit #1 starts at minimum capacity and increases to full capacity. When this condition is exceeded . . .
Unit #2 is brought on at half capacity and Unit #1 is reduced to half capacity. Then they increase in speed together.
At this point constant speed Unit #3 starts at full capacity. Units #1 and 2 reduce their speed to a point where total inflow and outflow are equal, thus maintaining desired well level.

Variable Speed

REDUCES SEWAGE PLANT COSTS

Why pay extra for variable speed pumping units in sewage plants?

Answer: it saves money in the long run. Here's how: (1) pumping rates are always closely matched to flow, (2) surges are avoided, (3) automatic pumping cuts costs by reducing the number of men needed, (4) the collecting well can be made considerably smaller because it can be designed for average instead of maximum flow.

The system that takes maximum advantage of the possibilities of variable speed operation is Worthington's Recycling Flow Control. Operated by a Worthington engineered control, the system maintains precise operation of variable speed pumps. The float control provides for the operation of a combination of variable and constant speed pumps simultaneously. How it works in a plant with two variable speed and one constant speed pump is shown above.

The Recycling Flow Control is the latest development of Worthington's continuous work in the public works field. It's another reason that to get the best and the latest you should come to Worthington first. Major public works products include: pumps, comminutors, compressors, engines, and turbines.

If you would like copies of engineering discussions of variable speed pumping for sewage works, write for Bulletins RP-952 and RP-1067. Address Worthington Corporation, Section 105-5, Harrison, N. J. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

Starting Salaries for Civil Engineers in 1958

(Median Entrance Figures)

ASCE Grade	Consultants		Contractors		State Highway Departments		Cities and Counties		RR's, Utilities and Industries		Federal	
	Med.	% Change (56–58)	Med.	% Change (56–58)	Med.	% Change (56–58)	Med.	% Change (56–58)	Med.	% Change (56–58)	Med.	% Change (56–58)
A	$3,000	+ 3%	$3,300	−19%	$2,880	+ 6%	$3,276	− 3%	$4,150	+22%	.....	....
B	3,600	− 2	4,000	− 7	3,456	+ 3	4,050	+ 8	4,638	+11	.....	....
C	4,500	+ 5	4,800	− 1	4,147	+ 5	4,386	+ 2	5,200	+11	.....	....
I	5,000	+11	5,200	+12	5,040	+ 9	5,100	+ 2	5,760	+12	4,490	+22
II	5,430	+ 6	5,600	+ 8	5,760	+12	5,554	+ 7	6,102	+11	5,430	+20
III	6,100	+ 3	6,400	+ 6	6,564	+14	5,940	− 3	6,840	+12	6,285	+16
IV	6,900	+ 6	6,950	− 1	7,174	+13	6,739	0	7,762	+11	7,510	+17
V	7,800	+ 7	8,230	+ 3	7,920	+ 8	7,284	+ 4	8,490	+ 7	8,810	+16
VI	9,000	+ 9	9,290	+ 8	8,712	+ 6	8,008	− 2	9,888	+14	10,130	+13
VII	10,000	+ 6	9,800	− 4	9,702	+ 3	9,000	+ 2	11,324	+10	11,595	+12
VIII	11,700	+11	14,700	+31	10,800	+ 8	10,384	− 2	13,944	+19	12,770	+10
IX	15,000	+ 4	15,600	+17	12,318	+ 7	12,583	− 9	20,000	+42	14,190	+10

Civils' Pay Increases Moderately

Civil engineers' salaries continued their moderate trend upward in 1958, according to the fifth biennial salary survey by the American Society of Civil Engineers. The survey represents a sampling of 331 organizations with 64,080 civil engineering employees—about two-thirds of them in state highway departments.

It covers all ASCE's salary-study grades from Grade A (chainman or note plotter) to Grade IX (administrative and professional head of an important engineering organization).

The professional grades of civil engineers (I-IX) averaged a 6.2% salary increase between 1956 and 1958. The pre-professional grades (A-C) averaged a 2.6% increase in the same period.

From 1950—the first year covered by the survey—to 1958, the median entrance salaries of privately employed civil engineers rose 22.8%; those of publicly employed civils (except federal employees) rose 40.4%.

This is attributed to the lower base of public salaries in 1950. Newly graduated civil engineers got the biggest increase in median starting salaries. Their starting rate jumped to $5,250 in 1958—65% over 1950. In the same eight years, average weekly earning of construction workers rose 50%.

The table shows the 1958 median salary for a civil engineering employee entering any one of the 12 ASCE grades, in seven types of employment. Railroads, utilities and industries pay civil engineers the highest salaries, among the seven fields. Lowest paying are municipalities and counties, in the professional grades, and state highway departments, in the pre-professional grades.

The greatest gains, on the basis of median entrance salary, were scored by pre-professions in railroads, utilities and industries, up 14.1% from 1956; civil engineering educators, up 11.1%; and professional grades in state highway departments, up 10.2%. The greatest salary cutbacks were suffered by pre-professionals with construction firms, down 8.8%; and professionals employed by municipalities and counties, down 1%.

Geographically, the highest-paid civil engineering employees resided on the West Coast and in the Midwest. The lowest paid lived in New England, the South and the West, according to the ASCE survey.

ASCE's latest Journal of Professional Practice (Volume 85 No. PP. 2, Sept., 1959) details the survey findings and defines the employment grades used.

New Loan Agency Moves Ahead

The outlook seems certain for creation of a new organization to make easy-term loans to the underdeveloped nations of the world. Member nations of the World Bank and the International Monetary Fund have unanimously approved creation of the International Development Association. It will be a branch of the World Bank.

How useful IDA will be is open to question, some observers believe. Its chief disadvantage is the comparatively small amount of money that will be involved, when measured against the size of the task to be done.

IDA will be capitalized at $1 billion spread over five years, but only $750 million—or $150 million a year—will be in hard, convertible currency that can be put right to work.

The U. S. proposes to turn over to IDA a portion of the billions of dollars in unconvertible currencies of various nations that it accumulated through the sale of surplus agricultural commodities.

Before any money is spent, the IDA charter has to be ratified, and an administration organized. That could take up to three years.

Despite creation of IDA, underdeveloped countries will get little more total development capital from advanced countries in the period ahead than they have been receiving in the recent past, observers say, and they may not get as much. In the U. S., for example, Congressional support for aid to underdeveloped countries is increasingly difficult to come by.

(B&F continued p. 158)

—— Make a "spec check"...

Compare Haulpak® ...see how

LW engineers "threw away the book" when they designed the new Haulpak off-road hauler . . . for *your* benefit. Some of the exclusive features that resulted are shown here. They are advantages that help you move *more* tonnage, *faster*, at *lower* net cost per ton.

To see what this advanced design approach means to Haulpak, check its specifications. You'll want "spec sheets" in your files anyway, and your LW Distributor can supply you copies. Then, with basic Haulpak facts handy, compare them to *other* off-road haulers.

WHAT YOU WILL FIND WHEN YOU COMPARE HAULPAK:

(Competitive hauler specifications are "averaged out" for simplicity purposes . . . but Haulpak superiority is just as clear over any *single* machine.)

WHAT TO COMPARE	Off-road Haulers 20-30-ton class		Off-road Haulers 30-40-ton class		HOW YOU BENEFIT
	Average*	Haulpak LW 27	Average*	Haulpak LW 32	
Length Wheelbase Turn Diameter	26'7" 14'4" 64'3"	23'10" 10'10" 44' 6"	31'5" 16'7" 77'6"	23'10" 10'10" 44' 6"	*HAULPAK is shorter.* You maneuver faster, quicker and in less space.
Top Speed (in mph)	30.7	35.4	25.2	38.8	*HAULPAK is faster,* for more cycles per hour, more tonnage per shift.
Empty Weight (in lb)	49,300	43,020	73,400	44,950	*HAULPAK is lighter,* for more payload weight, less "dead" weight.
Ground Clearance Front Axle Rear Axle	16" 16"	25" 20"	17¼" 18½"	25" 20"	*HAULPAK has higher clearance,* to minimize troublesome "dozing" action.
Brake Surface (sq inches)	1511	4680	1834	5148	*HAULPAK has bigger brakes,* for greater safety, more steady use of high speeds.

and here are some of the design features that make these HAULPAK advantages possible

(*Based on specifications available at time of printing)

All new . . . but Haulpak is already a *fully*-proven piece of equipment. Units worked for over 14 months on construction jobs, in mines, and in quarries, before the first Haulpak was put on the market. Exceptional results of these tests are now being duplicated all around the nation.

it can cut your haul costs

Hydrair* suspension...eliminates springs...permits higher clearance, shorter turns

Haulpak rides on air! 4 Hydrair units replace leaf springs. System cushions against loading and travel shock, reduces maintenance costs. Eliminates front axle, and compensates for off-center load. *COMPARE IT!*

"V"-shaped body...lets Haulpak outcarry trucks that are longer, higher, heavier

Bonus yardage in every Haulpak load rides in exclusive V-bottom of body. Slope also helps fill all corners for low-void payloads. "V" lowers center of gravity for better stability, traction, on grades. *COMPARE IT!*

Box-beam frame...3 times stronger, ⅓ lighter, carries 30% more payload weight

Strongest hauler body ever built. Floor and all wear-surfaces made of 10,000 psi steel, yet weighs 33% less than comparable bodies. Body is exhaust-heated. Haulpak hauls 30% more than its own total weight. *COMPARE IT!*

Available in 22, 27, and 32-ton capacities

PLUS: MINIMUM MAINTENANCE (entire lube-check, needed only at 500-hr intervals, consists of just 3 easy-to-reach grease fittings)... POWER-TRANSFER DIFFERENTIAL (famed Tournapull® feature which automatically transfers power to wheel on best footing when going is rough)... POWER-MISER FAN (cools with 20 to 25 less hp drain)... 100% RUBBER-MOUNTED BODY (absorbs impact and shock of loading)... FOUR SEPARATE BRAKING SYSTEMS (for fast stops with complete safety)... POSITIVE POWER STEER (for faster turning, easier handling)... SIMPLE SIX-GEAR FINAL DRIVE (compared to 12 or more usually standard)... BIG, ROOMY CAB (has many work-efficiency features).

*Trademark HP-2193-DC-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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Where quality is a habit

Republicans Set Goals for the Future

The Republican Party plans no substantial changes in its stand on national economic questions. That's the indication of a GOP report that may be a preview of its 1960 platform.

The report sets a party line on national policies between now and 1976 closely resembling many policies set under President Eisenhower. An important feature is the emphasis on private or local financing rather than reliance upon federal aid.

Many policies outlined in the report effect contractors and engineers.

Here's what the Republicans say about:

• **Housing.** "Millions of new dwelling units must be built" and "an expanding flow of mortgage credit will be necessary." "The government must act to assure both prompt availability (of funds) and soundness of lending practice."

• **Health.** Federal aid for construction of new medical schools and mortgage guarantees for construction of private nursing homes must be offered. The present hospital construction law should be amended for more effective provisions on renovation and repair of out-moded hospitals.

• **Education.** Federal grants for construction of college and dormitory buildings are justified, in some instances. "Matching federal grants for elementary and secondary classroom construction" is endorsed, but only where local resources "are clearly inadequate."

• **Public works.** By 1976, the nation will need twice its current supply of fresh water. The report urges a vigorous federal effort to "impound water, irrigate land, control floods and find an economical way to convert saline and brackish water to fresh." But, "the magnitude of the water problem must not become an excuse for projects, particularly multipurpose dams, motivated simply by a desire to extend federal activities."

• **Electric power.** Generating capacity must be tripled by 1976, but the work should be done privately or by local public utilities. On hydroelectric development, "federal spending clearly cannot do the job." Instead, the report recommends reincarnation of President Eisenhower's "partnership policy."

Steam and atomic power plant construction should be handled by private or local public enterprise. The federal government's role should be "strong effort" in basic research.

• **Labor.** The report endorses a limited program of federal financial and technical aid to chronically depressed areas. Also recommended: "An adequate federal-state unemployment compensation program" subject to periodic review.

• **Overseas investment.** Freer flow of private investment in underdeveloped nations should be encouraged through tax incentives and diplomatic aid to Americans investing abroad.

• **Credit.** Tight money is defended for the present. "A loose money policy would undermine the stability of the consumer price level and eventually destroy the acceptability of all fixed-income securities, including Treasury bonds. It is our opinion that (adjustments in national credit policy) can best be made by an independent Federal Reserve System."

• **Taxation.** Reductions should come after paying down on the national debt. Income tax cuts, when possible, should apply to all brackets. A moderate cut in the effective corporate rate also is set as a goal.

• **Depreciation.** For the long run, "We strongly recommend that the Treasury periodically review its depreciation schedules for all types of equipment and allow faster rates . . . where . . . necessary to reflect a more rapid pace of technological change."

Smaller Equipment Orders Reflect Drop in Awards

Contractors cut back orders for new equipment in August, reflecting a drop in contract awards. However, construction contracts rebounded moderately in September.

In August, the ENR index of new orders received by manufacturers of construction and mining machines fell to 270—18% below the near-record 330 recorded in July.

But 270 is still 21% above August, 1958, and within a whisker of the August record—271—set in 1956. The index, a sampling of equipment manufacturers by McGraw-Hill's Economics Department, is computed with the base of 1949 = 100.

Volume of new equipment orders for the first eight months of 1959 set a record despite the drop in August. The orders index averaged 309 per month—29% higher than in 1958 and 22% above the previous eight months' record, set in 1956.

A major factor in the demand for new construction equipment is the roaring comeback of private heavy construction (ENR Oct. 8, p. 84). Though public works contracts are on the downgrade, the upswing in private work was enough to raise the ENR contract award index for heavy construction to 245 in September from 238 in August. This index is also based on 1949 = 100.

A special survey of 100 machinery manufacturers shows that delivery time for construction machinery is now down to one month from receipt of order. In 1957 the time lag was two months, and in 1955 it was two and a half months.

Court Hits Pipe Price Fixing

A concrete pipe manufacturer and a pipe equipment manufacturer agreed to stop restraining trade and fixing prices of concrete pipe in New England. New England Concrete Pipe Corp., Newton, Mass., and Concrete Pipe Machinery Co., Sioux City, Iowa, consented to an injunction against these practices in Boston's Federal District Court.

The two firms, and Hume Pipe of New England, Inc., were under fire from the Antitrust Division of the U.S. Department of Justice. Hume consented to a decree in 1957.

The government complaint charged the firms with price fixing, allocating territories and excluding other companies from supplying concrete pipe or buying pipe-making machinery.

The court's decree requires New England Concrete Pipe Corp., to:

• Stop collecting cost information from or reporting it to other firms.

• Refrain from agreements with other manufacturers to fix prices or exchange price lists before they are made public.

• Stop disclosing bid information before bids are filed.

• Stop allocating customers, territories or markets.

• Issue new prices, based upon its own costs and profit margins, within 60 days.

• Cancel exclusive contracts with Concrete Pipe Machinery Co.

In another antitrust case trade association and 17 companies selling road-building materials in New England have been indicted by a federal grand jury in Boston, for conspiring to fix prices (ENR Sept. 4, p. 94).

At 300-home subdivision, Ervin Construction Company's D 'Pull spreads thin layer of earth to bring street to grade. Fast, accurate spread helped maintain speed throughout cycle.

Nation's biggest builder of custom houses uses D 'Pulls* for ALL subdivision earthmoving

ERVIN CONSTRUCTION CO., Charlotte, North Carolina, rated as the nation's largest builder of custom homes, completes a house every 2¼ hours! That's quite a record . . . but that isn't all. The firm also handles *everything* related to the development of its subdivisions, including building streets, landscaping, and installation of all utilities.

Most of these jobs require a lot of earthmoving . . . and to help complete 'em in record time, Ervin uses two D Tournapulls®. These 9-yd LeTourneau-Westinghouse scrapers handle a wide variety of assignments — from filling-in around foundations to final grading of streets. They work in tight quarters and around obstructions that would stop other types of equipment.

Men on the job praise 'Pulls

Says operator Cecil S. Perkins, "*This unit loads and spreads easy . . . and you can see either side of the pan. This is important when you're working in close quarters. And the electrical system is tops . . . especially the quick response you get simply by touching a switch. What's more, the D 'Pull can be driven 'cross town without need for a permit. It's fast too.*"

Comments operator C. C. Rhyne, "*LeTourneau-Westinghouse 'Pulls are hard to beat . . . we use them all over these housing jobs . . . self-load most of the time. They're the only machines that can get around in the small areas between houses. I service and maintain this unit . . . it's fast and easy.*"

Versatile LW D Tournapull works efficiently either as a self-loader or can be push-loaded. Here, push-loaded unit hauls in big load of fill-material to level low area. Ervin's 2 "D's" helped move 200,000 yd at this housing development near Charlotte, N. C.

*Trademark DP-2186-DCJ-1

Now better than ever

New LW D Tournapulls now have important new features including 143-hp engine . . . improved transmission with oil-pump and filter . . . and a bigger, longer-lasting clutch. These, and many other changes . . . plus all the proven LW speed-and-power advantages that have made the "D" top money-maker in its class . . . will help you earn still bigger profits. Ask for full details and arrange for a demonstration.

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Will the Labor Law Boomerang?

- **Management people are finding the law burdensome and difficult to understand. Some think they might be better off without it.**

- **Employers fear that if management fails to make the law work, the public will demand more restrictive labor-relations legislation.**

Employers in some quarters are beginning to view the new labor law with mixed emotions—even though they wanted it a few months ago.

The first month of the law's operation has generated confusion, bewilderment, doubts and misgivings. Some employer representatives are close to the point of wishing they could roll back the pages of history and wipe the law off the books.

Some indication of management's disenchantment came out of a briefing session on the law held in New York City last week under the auspices of the American Management Association.

The consensus at the session was that the law will help individual union members, small employers and the public. Closed loopholes in the secondary boycott provisions of the Taft-Hartley Act and the tighter restrictions on organizational and recognition picketing were considered the law's principal gifts to management.

But the price paid for management's benefits may prove high, it was felt. There was some feeling that management might be better off without the law and that lawyers are the only ones in line for substantial benefits.

The measure was generally considered too complex for the average union member or employer to understand. Many of its specific provisions were called fuzzy and ambiguous. The reporting requirements were viewed as tough, burdensome, vindictive, punitive, tricky and, in one respect, unconstitutional. **Some thought the law establishes precedents that may prove dangerous to management.** One attorney felt that if the law is strictly construed there will not be enough jails in America to hold the employers and union officials that could be convicted under it.

The next six months of the law's interpretive evolution and application were considered of vital importance to all employers.

Management was urged by speakers at the briefing session to acquire a good understanding of the law and to work diligently for its sound administration. **It was suggested by some that if employers fail to help make the law work, public opinion may turn against management and labor and force Congress to put an end to free enterprise in labor-management relations.**

The AMA briefing session was attended by nearly a hundred corporate officials, including officers, personnel and labor relations directors and attorneys. The background, general implications and specific provisions of the law were explained and interpreted by legislators, attorneys and businessmen familiar with the genesis and content of the law.

Here are some of the main opinions expressed. Many of them admittedly were guesses:

- The fabrication clause used by the plumbers union in its national and local labor contracts is illegal and void. Congress intended to limit the construction industry's hot-cargo exemption to the subcontracting of work normally done at the construction site. Unions cannot strike for those clauses that may be lawful under the law and they cannot strike to enforce them.

(The view that the construction industry hot-cargo exemption applies to work "actually done"—not work that "could be done"—at the site was supported last week by Rep. Carroll D. Kearns (R., Pa.), who served on the Senate-House conference committee that put the law together.)

- Contractors will not be allowed to manipulate the hot-cargo ban to their advantage. It would, for example, be unlawful for an employer during a labor dispute, to subcontract for off-site performance work that has been done in the past on-site.

- The law does not prohibit primary picketing but it does nothing to help define "primary" picketing. Use of roving pickets, where legal before, is still legal. And the law with respect to "struck work" remains the same—the employer who takes over struck work loses his protection as a neutral and the new boycott bans do not apply.

- The new secondary boycott provisions do not outlaw publicity picketing but such picketing becomes illegal as soon as it becomes effective. It can continue only so long as a boycott does not occur.

- The ban on boycotts by unions still requires the prohibited activity to occur "in the course of" employment. The law is no clearer than it was before on prospective employees.

- A union and an employer can probably agree not to discipline employees who decide on their own to engage in secondary boycott activity. Chances are that such an agreement is not a prohibited hot-cargo arrangement.

- The law is far from clear as to the kinds of employer payments or employer association arrangements that must be reported.

- The right of unions to engage in organizational picketing for "a reasonable period of time, not to exceed thirty days" before filing an election petition, does not establish a rule-of-thumb, 30-day grace period. Employers can file an unfair labor practice charge immediately and then leave it up to the National Labor Relations Board to decide what is a "reasonable period of time."

- Contractor and other employer associations are now generally subject to the same legal prohibitions that employers are. And, depending on the scope of their activities, they come within the reporting requirements of the law.

- Union and employer reports will duplicate each other in some areas. This permits unions to expose noncomplying employers. Compulsory reporting of activities that are crimes under Section 302 of the Taft-Hartley Act may be a form of unconstitutional self-incrimination. Some employers may find themselves in the embarrassing position of invoking the Fifth Amendment.

- Use of state law under the new no-man's land provision may lead to a lack of uniformity in labor law and

Mainframe-mounted ripper is compact and rugged. Pressure applied to its shank and points tends to compress the grader tires, for even better traction and increased ripping efficiency.

NOW AVAILABLE...Rear Rippers for LW Graders

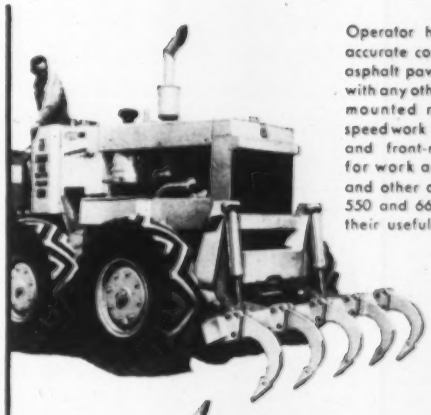
Available now, for use with LW 550 or 660 motor graders, is this new heavy-duty ATECO *ripper*. Attached to the rear of a big LeTourneau-Westinghouse grader, it breaks up heavy and tough materials, *at fast speed* . . . gives new versatility to motor graders.

Easily and quickly mounted to LW's massive, one-piece frame, the ripper operates through the grader's hydraulic system. Its shank shape and point angle . . . teamed with the power and weight of the "550" or "660" . . . provides quick penetration, to any depth up to 12 inches. The ripper greatly increases the usefulness of your LW grader, and makes it a one-man "wrecking" tool that will let you handle more work at a saving in time and equipment.

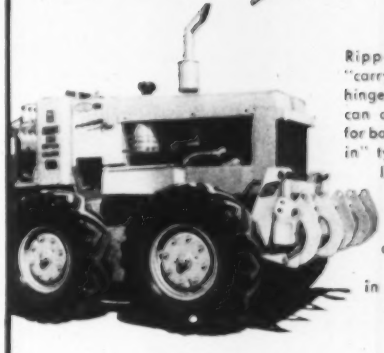
Fully-tested, fully-approved

This new attachment was engineered especially for the LW 550 and 660 by ATECO, a pioneer designer and developer of ripper attachments. The unit has been made available only after months of testing and successful application on LW graders, where it proved its money-making potential.

This new money-saving attachment is available with several different shank shapes, for various jobs, and can be mounted to "660" or "550" graders in the field, or purchased as optional equipment with new graders. Ask for full details.



Operator has complete and accurate control, can "scalp" asphalt pavement faster than with any other tool. With rear-mounted ripper for high-speed work in tough materials, and front-mounted scarifier for work around manholes and other obstructions, LW 550 and 660 graders add to their usefulness.



Ripper is shown in raised "carry" position, using one hinge pin. Unit's raised shanks can also be pinned rigidly, for bank, corner, or any "back-in" type work. Ripping is a logical utilization of the excellent power and traction characteristics of the big LW 550 and 660 graders, which offer 123 and 145 hp in "straight-shift" models, and 160 and 190 hp in POWER-Flow® torque-converter models.

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heavy duty disc assembly that lasts and lasts!

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. . . ideal for use in pump suction or discharge lines to cushion and reduce slamming and hammering. Lever may be positioned to speed up or slow down closing of disc. Weight is easily adjusted in field.

Iron Body — Fully Bronze Mounted
Bronze Seat Ring
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Flanged, Screwed or Hub Ends
Working Pressure: 175 p.s.i.
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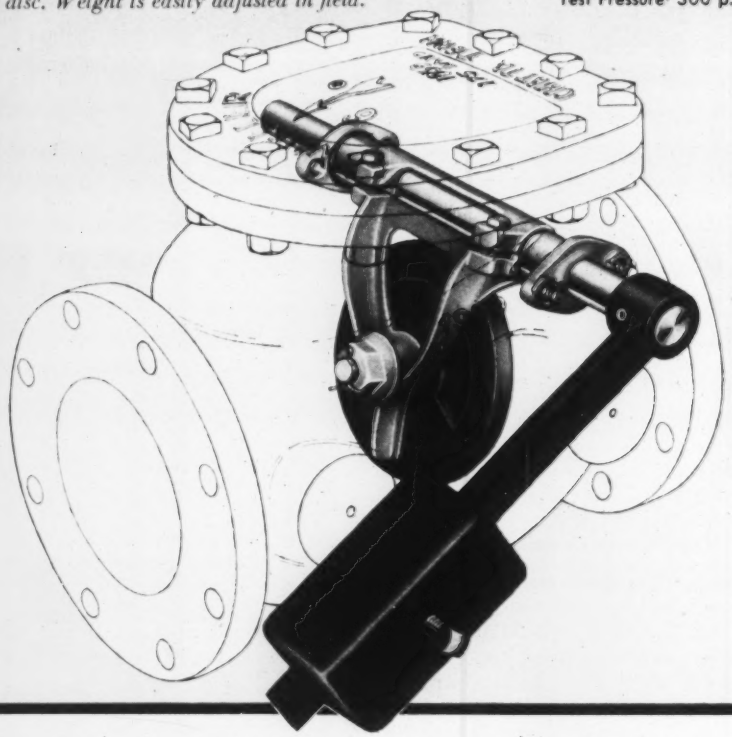

All working parts of these new Mueller Swing Type Check Valves are heavily made to assure long service life and dependable operation *without maintenance.*

A heavy stainless steel hinge pin is used on all lever and weight type (shown) and lever and spring type check valves. This pin is extended through the hinge plugs to permit the lever to be used on either side of the body. An "O" ring on the plug prevents leakage around the pin.

The plain type, without lever, weight or spring, uses a new combined hinge pin and plug which is securely and accurately held to the body by studs and nuts. An "O" ring positively seals the plug to prevent leakage.

Large, wear-resistant bearings and a full-width clapper arm hinge, used in all types, accurately and rigidly align the disc to eliminate chatter and vibration.

These new, heavy duty check valves have been specifically designed for repeated opening and closing applications in water works pumping stations, water filtration plants, sewage treatment plants and general industrial plants. They are suitable for horizontal or vertical installation on water or oil lines.

Write for specifications.

The many exclusive features of these new check valves are typical of the attention to detail in research, design and engineering that becomes a part of every Mueller product.

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create inequities from both labor and management viewpoints.

• The new "bill of rights" and fiduciary provisions are green lights to endless litigation and can cause a number of headaches for employers. They tend to promote the dissident element that often harasses employers. And they allow internal union politics and conflicts to be reflected in union bargaining demands and attitudes.

• Side agreements or letter or supplemental agreements to labor contracts—agreements that are often kept in the dark and never ratified—may now have to be published.

• The law establishes two revolutionary concepts that may be applied in time on a tit for tat basis to lawyers and employer associations that act as labor relations consultants. One is that unions are quasi-public agencies rather than private organizations free from government intrusion. The other is that the interests of unions and their members are not necessarily identical.

Even the bill's authors are unsure of interpretation; for example Sen. Winston L. Prouty (R., Vt.), who helped draft the law, conceded he cannot tell what it adds up to until the NLRB and the courts interpret it. And the minority counsel to the Senate Labor Committee said the courts are bound to read into the law Congressional "intent" that never existed.

Some of the session speakers were critical of the law's omissions. One attorney said employers still cannot enforce no-strike clauses granted as a quid pro quo for enforceable arbitration clauses and that employers continue to stand on shaky ground when they engage in lockouts as a defense against whipsawing tactics. Fred A. Hartley, Jr., said Congress should have extended the antitrust laws to labor and imposed stronger bans on mass picketing and featherbedding.

It was noted that union efforts are afoot to amend the law, including relaxation of the boycott ban in the construction industry.

Employers were advised in the interests of self-protection to be sensitive to public opinion and to discharge faithfully their obligations under the law. They were urged to increase their political action and to place more emphasis on the use of existing laws rather than on passage of new legislation.

Throughout the session, attention was frequently drawn to the dim prospects that lie ahead as the government moves further in to cover the defaults of management and labor. Some wondered if the steel and dock disputes are not already tolling the death of free collective bargaining and the birth of administered bargaining.

Management and Labor on Trial

President Eisenhower's decision last week to use the emergency provisions of the Taft-Hartley Act in the steel dispute raises this fundamental question:

Will the collective bargaining breakdown that has caused the longest steel strike mark the end of free collective bargaining?

The prevalent fear of an affirmative answer is about the only thing on the horizon this week that holds promise for a voluntary settlement.

If management and labor fail to reach a settlement on their own terms before the present legal remedies are exhausted, public opinion may force Congress to act. Current speculation suggests a number of possible moves that frighten management and labor alike, including: administered bargaining, compulsory arbitration, price and wage controls, new featherbedding bans and extension of antitrust laws to labor.

Hope of avoiding such a possibility appears to account for the slow Presidential timetable for Taft-Hartley use in the steel dispute and for the unorthodox approach of the fact-finding board headed by a University of Pennsylvania professor, George W. Taylor.

The present strategy puts the administration of the law on trial as well as management and labor bargaining attitudes. Plans call for a full-scale hearing with emphasis on the issues, rather than on the national emergency, before the President has to make up his mind on seeking an injunction.

This preliminary phase, scheduled to last a week, may succeed in redefining the issues in such a way that an acceptable basis for voluntary settlement will suggest itself.

Mr. Taylor prefers voluntary settlement to government dictation, and free bargaining and mediation to compulsory arbitration. He says, "We are going to do everything within our powers under the act to narrow the differences. . . . Nothing would delight me more than to get a settlement."

Mr. Taylor's approach has the overtones of mediation, which the law neither contemplates nor authorizes in regard to the fact-finders.

The role of mediation is left under the law to the Federal Mediation and Conciliation Service.

The design of the law is simple. It merely breaks a strike temporarily and forces the parties to continue bargaining for a maximum of 80 days with no outside interference except for whatever help the Mediation Service can give.

The fact-finders are expressly forbidden to make any recommendations and limited to two functions:

• They are required, initially, to prepare for the President's guidance a statement of the "facts" surrounding the "causes and circumstances" of the dispute. If the President is convinced, as he was in the dock strike, that the strike affects an entire interstate commerce industry, or a substantial part of it, and that the strike, if continued, will "imperil" the national health and safety, he can seek an injunction.

• If an injunction is issued, the fact-finders again report to the President at the end of 60 days, telling him what the positions of the parties are and what the last offer of management is. The rest is up to the President, the National Labor Relations Board, the courts and Congress. The procedure calls for submission of the offer by secret ballot to union members, dissolution of the injunction and referral of the dispute, if it remains unsettled, to Congress for appropriate action. None of these steps legally involves the fact-finding board.

The steelworkers union, which has the full support of the rest of the AFL-CIO, accuses the Administration of serving as a tool of "big business" in resorting to the Taft-Hartley Act. It promises to leave no stone unturned in trying to prevent the issuance of an injunction. If an injunction is issued, it will bring the steel industry no closer to a settlement of the fundamental issues, the union says.

The issues are: How much money is labor entitled to? How much security should workers have? What causes inflation? What are management's prerogatives? These are issues faced by all employers and all workers.

The final answer rests with the public. Current developments indicate a tendency to lean over backwards to let all of labor and all of management decide whether they want to find the answer within the framework of the free enterprise system or in new laws.

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Two Gurley transits now feature built-in Optical Plummets to eliminate plumb bobs ...save set-up time ...improve accuracy. The Optical Plummets will focus on distant objects, such as encountered in bridge or building construction—or as close as 12 inches for setting over a point. Built-in shifting head allows 2-inch shift over a point, giving ample leeway in initial set-up. Write for Bulletin OP-100.

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Want Arbitration?

Senator says bargaining failures could force it

Sen. Winston L. Prouty (R., Vt.) warned members of the American Management Association last week that management and labor may succeed in destroying the free enterprise system unless they subordinate selfish interests to the public welfare.

Compulsory arbitration of labor disputes, he said, may necessarily be imposed by Congress if protracted strikes persist in basic industries.

The Senator was a member of the Senate-House conference committee that produced the new labor law.

Senator Prouty urged management and labor to stop thinking "only in terms of what is good for me" and realize the public welfare is paramount.

Speaking in New York City at an AMA briefing session on the Landrum-Griffin Labor Law, Senator Prouty said:

"Labor does not want compulsory arbitration, management does not want it, I do not want it and I believe that Congress does not want it. You may be sure that such legislation will only be enacted if it becomes necessary because both management and labor fail to exercise that high degree of economic statesmanship which the public interest requires."

The public may turn against both parties, as it has done before, he warned, if basic industry strikes are prolonged by lack of good-faith bargaining.

The Senator predicted that federal intervention in all areas will increase as life becomes more complex. He suggested that responsible leadership in the ranks of both management and labor can slow the trend and he urged businessmen to take a more active part in the political life of the country.

The Vermont Republican chided businessmen, however, for the "all or nothing" attitude common among them and expressed disappointment in management's presentation of testimony on the labor bill.

"Too frequently," he charged, "the businessman's conception of playing an effective role in politics amounts to marching under the slogan, 'Let's Crucify Organized Labor,' and this has not been without dire political consequences."

Senator Prouty gave this advice to those who petition Congress: "Be prepared to show that [your] personal, parochial interests coincide with the larger interests of the nation as a whole, and preferably, that they contribute to the general welfare of the country."

Unions Make Local Peace Pact

Building trades and several industrial unions agree on distribution of construction work jobs in Connecticut

The Connecticut State Building and Construction Trades Council and three AFL-CIO industrial unions in Connecticut (rubber workers, textile workers, electrical workers) have worked out a state-wide agreement to minimize and adjust jurisdictional conflicts between the two groups.

The agreement outlines the types of industrial construction work that properly belong to building tradesmen—or to industrial workers.

It follows the basic patterns established in similar pacts negotiated in Detroit and Youngstown (ENR Sept. 24, p. 86).

Four things lend particular significance to the pact:

• It has a direct impact on the activities of the Construction Industry Joint Conference. CIJC is attempting to promote the principle of construction by contract. It is deeply concerned with the loss of construction and maintenance work to industrial unions and is trying to find ways to help contractors and building trades unions recoup the losses they have sustained. There is a danger that local agreements of the Connecticut type, if not integrated with the activities of CIJC, may jeopardize specific approaches CIJC may eventually recommend.

• The AFL-CIO is now engaged in a massive effort to defeat what it calls a business conspiracy to weaken unions. The unity it needs for effective defense has been dissipated in the past by the feud between building trades and industrial unions. Conclusion of local peace pacts is further indication of labor's determination at the local level to make the merged federation an effective instrument for promotion of the trade union movement.

• The AFL-CIO Building and Construction Trades Department has urged wholehearted participation by its affiliates in labor's common defense but it wants to go slow on the resolution of its conflict with industrial unions. It has urged that local peace pacts be deferred until the original agreement, worked out in Detroit, proves itself in practice. It wants to avoid faulty precedents.

• The AFL-CIO, in the most recent and boldest of its efforts to achieve unity, has agreed to set up internal peace machinery based on the principle of arbitration of specific disputes on a case-by-case basis. The building trades and industrial unions have subscribed to this approach. The plan that will emerge from a special AFL-CIO convention next year may nullify or abrogate nonconforming local peace pacts.

The Connecticut Plan follows the basic doctrine established in Miami last year: Production and maintenance work belongs to members of industrial unions; new construction work belongs to building tradesmen. Jobs in the doubtful areas shall be performed according to past practice.

Standards for determining who gets what work under these basic rules are set forth in the agreement. The rules cover new buildings on new plant sites, new buildings or additional equipment on existing plant sites, complete remodeling of existing buildings on unrelated existing plant sites, complete remodeling of existing buildings on existing plant sites, complete remodeling of buildings under production, and plant rearrangements.

The agreement attempts to curb the right of industrial owners to hire new employees for the specific purpose of denying work to building tradesmen, where such owners are accustomed to using their own workers for work covered by the agreement.

It also provides that when a general contractor is engaged to erect a building, all phases of the construction work shall be done "by members of the building trades union." The agreement is silent on the manner of making these provisions effective.

Part of the agreement commits the building trades and industrial unions to help each other in their organizing campaigns and to refrain from raiding each other's jurisdiction.

A permanent 12-man joint committee is established to handle problems that arise under the agreement and to maintain continuing "friendly and cooperative relationships."

Contractor Seeks Damages In Jurisdictional Strike

A jurisdictional dispute between carpenters and laborers over the unloading of door frames from a truck has led to a $50,000 civil damage suit against a Rhode Island local of the carpenters union.

The suit was filed in Federal District Court by E. Turgeon Construction Co. after four members of the carpenters union left their jobs because of the dispute.

OFFICIAL PROPOSALS

District of Columbia—Highway Construction—Dept. of Highways & Traffic, September 25, 1959. CONSTRUCTING THE SUBSTRUCTURE FOR NEW WEST HIGHWAY BRIDGE OVER POTOMAC RIVER, VICINITY 14TH STREET, STRUCTURE NO. 1133, FEDERAL AID INTERSTATE PROJECT NO. I-95-1(234)0—(INVITATION NO. C-6032-H), Contract 1-C (Concrete Box Girder Spans Superstructure Alternate), will consist of approx. the following quantities: 14,160 cu. yds. Structure Excavation; 67,920 lin. ft. Steel H-Beam Piles; 15,635 cu. yds. Concrete; 338,650 lbs. Reinforcing Steel; and 62,510 cu. ft. Granite Masonry. Contract 1-S (Steel Girder Spans Alternate) will consist of approx. the following quantities: 14,650 cu. yds. Structure Excavation; 62,260 lin. ft. Steel H-Beam Piles; 16,225 cu. yds. Concrete; 386,750 lbs. Reinforcing Steel and 57,415 cu. ft. Granite Masonry. (Addendas No. 1 and 2 will accompany specifications). Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Section, Procurement Office, D. C., Room 404, 499 Pennsylvania Ave., N. W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 PM, EST, October 30, 1959, in Room 424, 499 Penn. Ave., N.W.

District of Columbia—Highway Construction—Dept. of Highways & Traffic, September 25, 1959. CONSTRUCTING THE SUPERSTRUCTURE FOR NEW WEST HIGHWAY BRIDGE OVER POTOMAC RIVER, VICINITY 14TH STREET, STRUCTURE No. 1133, Federal Aid Project (Interstate) No. I-95-1(234)0, Contract 2-C (INVITATION NO. C-6033-H), consisting of (Concrete Box Girder Spans Alternate) consist of approx. following quantities: 9,610 cu. yds. Class AA Concrete; 1,930 cu. yds. Lightweight concrete; 2,516,550 lbs. Reinforcing Steel; 307,100 lbs. Structural Metalwork; and 143,700 lin. ft. Prestressing Strands. Contract 2-S (Steel Girder Spans Alternate) consist of approx. following quantities 7,463,100 lbs. Superstructure metalwork; 4,575 cu. yds. Class BH Concrete; 720,000 lbs. Reinforcing Steel (Addendas No. 1 and 2 will accompany specifications. Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Section, Procurement Office, D. C., Room 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 PM, EST, October 30, 1959, in Room 424, 499 Penn. Ave., N.W.

Bids: See Advertisement

Iraqi Republic
Iraqui Ports Administration—Basrah

Tenders are invited for the supply and delivery at Port Stores Jubailah—Basrah of the following materials:—

	Closing Date
1) Tender for the supply of Grinder, Lathe and Universal Milling Machines	25.10.1959
2) Tender for the supply of 6 Mobile Cranes 4 Tons Capacity	1.11.1959
3) Tender for the supply of 40 Water Coolers	8.11.1959
4) Tender for the supply of 300 Tons Coke Nut	8.11.1959
5) Tender for the supply of 7 Communication Transmitters for Wireless Stations	15.11.1959

Forms of Tender and specifications are obtainable from the Iraqi Republic Representatives or from Mudir, Purchasing and Tender, Iraqi Ports Administration—Basrah, during working hours, on payment of ID. 1/— for each Tender (which will not be refunded).

The Tender should reach the Iraqi Ports Administration, before 13.00 hours of the closing date of each tender mentioned above.

The Tender is also available at the Embassy of the Republic of Iraq, 2135 Wyoming Avenue N.W., Washington, D. C.

One Iraqi Dinar is equal to $2.80.

V.O.19.9.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.
SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: October 29, 1959

New York State Canal & Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and Canal Law and special provisions for projects financed with Federal Air Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time, on the 29th day of October, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Schenectady (Rte. 5)	R.C. 59-148	Great Western Gateway Br., S.H. 9213	0.74	Asph. Conc. Pavt. & Bridge Repair	$11,000 Plans $5	$200,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 Genesee Street, Utica 1, New York						
Madison & Oneida (Rte. 365A)	FAC 59-10 FASH 59-15 FARC 59-104	Proj. US-496(1) City of Oneida: East-West Arterial Highway; Prospect St.: Oneida East; Chittenango-Oneida Pt. 2, S.H. 726 & Chittenango-Oneida Pt. 3, S.H. 1821	2.70	Asph. Conc. Pavt. = 2.70 Mi 2 Sp. WF Beam Bridge 105	$72,000 Plans $5	1,310,000
Montgomery (Rte. 5)	FAC 59-11 FASH 59-17 FARC 59-108	Proj. U-F-349(12) City of Amsterdam: East-West Arterial Highway; Amsterdam East: Rte. 5 Connection; Mohawk River Turnpike, Amsterdam-Cranesville, S.H. 180 & Hoffman-Cranesville, S.H. 5126	5.28	Demolition of Bldgs.	$5,000 Plans $5	95,000
DISTRICT No. 3, E. E. TOWLSON, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 90)	FARC 59-61	Proj. F-598(4) Aurora-Union Springs Pt. 2, S.H. 1690	4.59	Asphalt Concrete Pavt. Type 1A	$48,000 Plans $5	861,000
Onondaga & Oswego (Int. Tour. Rte. 81)	FITS 59-18	Proj. I-81-2(37)84 Int. Rte. 505, Syracuse (Willow St.) to Parish FIC 56-11, FAC 54-3, FASH 54-3, FISH 57-6, FISH 57-8, FISH-3, FISH 58-9 & FISH 58-26	26.40	Traffic Signs & Delineators	$9,000 Plans $5	166,000
Oswego	U.S. 101	Lock 0-7, Oswego Canal, City of Oswego	....	New Gates, Lowering Upper Sills & Misc. Work	$5% of Bid Plans $10	(Confidential)
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Int. Tour. Rte. 490)	FIC 59-16	Proj. I-490-2(12) Interstate Rte. Connection 580 (Rochester City: Eastern Expressway Pt. 1)	0.76	Demolition of Bldgs.	$4,500 Plans $5	84,000
Monroe	FAC 59-17	Proj. U-1089(12), U-231(17) Rochester City: Inner Loop (North St. to George St.)	0.14	Demolition of Bldgs.	$3,000 Plans $5	56,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court St., Buffalo 2, New York						
Chautauqua	FASS 59-24	Proj. S-554(1) French Creek-Marks, Co. Rd. 322	0.32	Bit. Double Surf. Treat Pavt. 2 Sp. Comp. I-Beam Bridge 147'	$8,000 Plans $5	155,000
Niagara	M 59-11	Bridge E-222 Erie Canal, Gasport	....	Reconstruction of 2-Story Frame Control House	$1,000 Plans $10	18,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick St., Binghamton, New York						
Broome (Rte. 26)	RC 59-149	Union-Maine, S.H. 275; Maine, S.H. 374 & Maine-Glen Aubrey, S.H. 1449	....	Removal of 43 Trees	$220 Plans $5	4,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main St., Babylon, L. I., N. Y.						
Nassau (Rtes. 25 & 107)	FARC 59-133	Proj. US-377(2); US-500(2); U-1000(6) Massapequa-Glen Cove, S.H. 9017; Jericho-Oyster Bay; S.H. 9021; Jericho Turnpike, S.H. 9020 & Jericho Turnpike-Plainview Rd., S.H. 436	3.04 (0.88 Acc.)	9" Cem. Conc. Pavt. 2 @ 37' Var. Wide = 2.28 Mi. Misc. Work = 0.76 Mi. (9" Cem. Conc. Pavt. with Carbon Black = 0.88 Mi. Acc.) 4 Sp. Comp. WF I-Beam Hy. Sep. 206'	$165,000 Plans $5	2,995,000
Nassau (Rte. 107)	FARC 59-151	Proj. US-377(3) Massapequa-Glen Cove, S.H. 9017	0.66	Drainage Work = 0.55 Mi. Misc. Work = 0.11 Mi.	$15,000 Plans $5	261,000
Nassau & Suffolk	FALIE 59-2	Proj. U-862(23) Long Island Expressway (South Oyster Bay Rd. to Nassau-Suffolk County Line) Cont. No. 6	3.27 (4.04 Acc.)	9" Cem. Conc. Pavt. with Carbon Black 2@ 36' Var. Wide = 3.17 Mi.; Misc. Work = 0.10 Mi. (Acc Ramps = 1.86 Mi. Cem. Conc. Pavt. & Service Rds. = 2.18 Mi. Asph. Conc. Pavt.); 4 Hy. Seps. R.C. Rig. Frames 49.2', 155.2', 139.6', 79.9'; 2 Hy. Seps. Comp. Weld. Steel Plate Girders 113.2', 113.5'; 2 Hy. Seps. Comp. Steel Stringers 89.9', 149.6'	$180,000 Plans $10	8,745,000
		Total 14 Contracts (12 Hys. & 2 Canal)	52.82			$14,950,000

Any projects in this letting that are on the Federal Air highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: November 9, 1959.

Arthur Kill Bridge Contract No. 3

The Staten Island Rapid Transit Railway Company will receive bids *until* 2:00 P.M., E.S.T. on November 9, 1959, for the demolition of existing structures and for the construction of the fender system for Pier No. 1, Bridge No. 242, over Arthur Kill between Arlington, Staten Island, New York, and Elizabeth, New Jersey.

Plans, specifications, bidding and contract forms may be seen at the office of Mr. C. L. Kroll, Regional Engineer, Baltimore & Ohio Railroad Company, Room 1304, Baltimore & Ohio Building, Baltimore and Charles Streets, Baltimore 1, Maryland, and at the office of the Resident Engineer, the Staten Island Rapid Transit Railway Company, St. George Ferry Terminal, Staten Island, New York, on and after October 16, 1959.

Copies of these papers may be secured at the said offices by bonafide bidders by the deposit of $50.00 for each set, which will be refunded upon returning the set in good condition within one week after the award of the contract.

C. R. RILEY
Chief Engineer

Bids: December 8, 1959.

Construction of Sewers and Relay of Water Mains

PHILADELPHIA, PENNA.
PROCUREMENT DEPARTMENT
WATER DEPARTMENT

Sealed bids will be received in Room 313, City Hall Annex, until 2:30 P.M. (E.S.T.) on Tuesday, December 8, 1959, and opened at that time, for Bid No. 2408—Work No. S-2676-RED.

Construction and Reconstruction of Sewers and Relay of Water Mains in Oregon Avenue from Bulkhead Line at Delaware River to Front Street; Front Street from Oregon Avenue to Porter Street; Porter Street from Front Street to Tenth Street.

PRINCIPAL ITEMS OF WORK:
826 lin. ft. of Twin 6'6" h x 9'6" W reinforced concrete conduit on piles.
135 lin. ft. 6'6" h x 9'6" W reinforced concrete conduit on piles.
3117 lin. ft. 6'6" h x 9'0" W reinforced concrete conduit on piles.
904 lin. ft. 6'0" h x 8'6" W reinforced concrete conduit on piles.
3666 lin. ft. 5'6" h x 9'0" W to 5'0" h 6'0" W reinforced concrete conduit.

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 3, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 113 City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

MICHAEL H. SURA, COMMISSIONER.

District of Columbia—Highway Construction—Dept. of Highways & Traffic, October 1, 1959, CONSTRUCTING THE RIVER CROSSING SUBSTRUCTURE FOR THE THEODORE ROOSEVELT BRIDGE, FEDERAL AID INTERSTATE PROJECT NO. I-66-1(10). Contract No. 1, consisting of approximately 14,713 cu. yds. Class B Concrete, 584,000 lbs. Reinforcing Steel, 705 Concrete filled pipe piles, 6,454 cu. yds. Stone Masonry; and 55,000 lbs. Structural Steel. (The Labor Department has predetermined the wage rates to be used on this Interstate Project.) "On October 22, 1959, 1:00 P.M. EDT, Rm. 402, District Bldg., 14th and "E" Sts., N.W., Wash., D. C., pre-bid meeting will be held between Dept. of Highways and Traffic Engineers and bidders to answer questions on this project". Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $36.00 per set, payable to D.C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 P.M. EST, October 29, 1959, in Room 424, 499 Pa. Ave., N.W.—INVITATION No. C-6053-H.

OFFICIAL PROPOSALS

District of Columbia—Highway Construction—Dept. of Highways & Traffic, September 29, 1959, RECONSTRUCTION OF THE EASTBOUND SECTION OF THE BENNING ROAD VIADUCT, FEDERAL AID PROJECT NO. F-FG-1062)—Invitation No. C-6020-H, consisting of approx. the following quantities: 18,064 cu. yds. Excavation; 14,000 cu. yds. Backfill and fill; 3,170 sq. yds. 8" Soils base; 2,420 sq. yds. 8" Reinf. Concrete Base; 5,035 sq. yds. 2½" Sheet Asphalt Pavement; 152 Tons Hot Asphalt Concrete; 2,286 lin. ft. Aluminum Railing; 5,037 cu. yds. Class BB Concrete; 14,120 cu. ft. Stone Masonry; 761,200 lbs. Reinforcing Steel; 581,000 lbs. Structural Steel; 5,350 lin. ft. Drilled Shaft Piles; 1,030 lin. ft. 18" and 12" R. C. Pipe and 830 lin. ft. Various sizes steel and C. I. Watermain. (Addendum No. 1 will accompany specifications). Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pennsylvania Avenue, N. W., upon deposit of a certified check for $30.00 per set, payable to D. C. Treasurer, (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 PM, EST, October 27, 1959, in Room 424, 499 Penn. Ave., N.W.

Bids: December 1, 1959

Steel Reinforcement Bars

KINGDOM OF THAILAND
ROYAL IRRIGATION DEPARTMENT
BANGKOK, THAILAND
INVITATION FOR BIDS—NO. YS-4-7

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing and delivering either f.a.b. Contractor's shipping point or c.i.f. Bangkok Wharf, Kingdom of Thailand for the Yanhee Multipurpose Project in accordance with the Contract Documents. Invitation for Bids No. YS-4-7, the following materials:

2240 metric tons of Steel Reinforcement Bars, of selected diameter, to American Society of Testing Materials Standards, or equivalent, and to lengths of approximately 12 meters.

Bids will be opened at 10:00 A.M., 1 December 1959. Copies of Contract Documents, Invitation for Bids YS-4-7 may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to:

Royal Irrigation Department
Attention: Thai Liasion Engineer
c/o Engineering Consultants, Inc.
1940 West Mississippi Avenue
Denver 23, Colorado

Each request must be accompanied by a check or money order made payable to the Royal Irrigation Department in the amount of U. S. $5.00 for each copy of the Contract Documents requested. The remittance is non-returnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

Bids: November 10, 1959.

Contract LGA-270.006

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
SERVICE ROAD REALIGNMENT

Sealed proposals for furnishing and installing paving and utilities for a new service road at LaGuardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, November 10, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF
NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, October 15, 1959
Composition 10 Units

CONTRACTORS
WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: November 15, 1959.

Supply of Passenger Launches and Drinking Water Tankers

IRAQI REPUBLIC
IRAQI PORTS ADMINISTRATION
BASRAH

Tenders are invited for the supply and delivery at Port Marine Dockyard Jubailah Basrah of the following materials:

1) Tender for the supply of Three Passenger Launches and other Craft. Closing date, 15.11.59.

2) Tender for the supply of Two Drinking Water Tankers Capacity 200-300 Tons. Closing date, 15.11.59.

Forms of Tender and specifications are obtainable from the Iraqi Republic Representatives or from Mudir, Purchasing and Tender, Iraqi Ports Administration-Basrah, during working hours, on payment of ID. 1 for each Tender (which will not be refunded).

The Tender should reach the Iraqi Ports Administration, before 13.00 hours of the closing date of each tender mentioned above.

The Tender is also available at the Embassy of the Republic of Iraq, 2125 Wyoming Avenue N.W., Washington, D. C.

One Iraqi Dinar is equal to $2.80.
V-O-19.9.

U.S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 16C-5247) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, November 17, 1959, for furnishing labor and materials for Stage 02 Additions to Huron Substation Initial 230-KV Development, Transmission Division, South Dakota, Missouri River Basin Project. Location near Huron, South Dakota. Principal items are: 5,460 cu. yds. excavation; 115,000 pounds, furnishing and erecting substation steel structure; 90,000 pounds, furnishing and erecting transmission line approach towers; 3 transformers, installing 20,000 kva power transformers; and other work. Completion time 470 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 16C-5248) will be received at Klamath Falls, Oregon, until 10 a.m., Pacific Standard Time, November 16, 1959, for furnishing labor and materials for earthwork and structures for canal, laterals, and drains, Sump 2, Contract Unit 1, Tule Lake Division, Oregon-California, Klamath Project. Location near Tule Lake, California. Principal items are 410,000 cu. yds. excavation; 84,000 cu. yds. placing earth lining; 95 cu. yds. concrete in structures; 2,000 lin. ft. corrugated-metal pipe; and other work. Completion time 385 days. For particulars, address Bureau of Reclamation, P. O. Box 312, Klamath Falls, Oregon; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

EMPLOYMENT OPPORTUNITIES

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The advertising rate is $39.20 per in. for all adv. appearing on other than a contract basis. Frequency rates quoted on request.

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$2.40 per line, min. 3 lines. To figure advance payment count 5 aver. words as a line.
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Box numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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OVERSEAS
on
Multi-Purpose Dam Project in Thailand
24-Month Contract

Fully qualified engineer with five or more years of large Arch Dam construction experience. Only qualified applicants will be considered. Experience must include mass concrete pours, cooling of mass concrete, placement of reinforcing steel. Prefer mature man with Civil Engineering degree or will consider man with equivalent experience. Family status available. Must pass physical examination and security investigation.

- EXCELLENT SALARY
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- QUARTERS AND SUBSISTENCE
- MEDICAL CARE & INSURANCE

Write fully, include complete salary information to:

SVERDRUP & PARCEL ENGINEERING CO.
915 Olive Street, St. Louis 1, Mo.

OPPORTUNITY FOR ASSOCIATES

1. Complete charge of your own Division.
2. Drawing account, Equal income sharing with management, *Plus* income from your own investment.

ASSOCIATES needed in the following divisions: PETROLEUM, CHEMICAL & PETRO-CHEMICAL, GEOLOGIST & MINING, SANITATION & WATER SUPPLY, INDUSTRIAL ENGINEERING, MECHANICAL, ELECTRICAL, ARCHITECTURAL-ENGINEERING, CONSTRUCTION ENGINEERS, (2) required. Both domestic and foreign work.

AGE: 40 to 65; President, Executive Vice-President, and Vice-President level.

MINIMUM INVESTMENT required $25,000.00 Principal enjoys TOP recognition in world affairs.

JOB HUNTERS NEED NOT APPLY.

Send complete resume to:

P-2588, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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P-2761—Engineering News-Record
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P-2759, Engineering News-Record
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SW—2763 ENGINEERING NEWS-RECORD
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

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Town Engineer with experience in sewerage and sewage treatment, water distribution and municipal engineering: Salary open. Forward resume to Town of Vestal, New York.

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Civil Engineer—must be a graduate with about five years outside experience by large Chicago heavy construction contractor, as Job Engineer. Permanent position and excellent opportunity, as several of our executives have started with us in similar jobs. Please send resume to P-2793, Engineering News-Record.

Estimator—Top pay and working conditions for a fully experienced productive competitive estimator. Wingate Construction Company, 34 South 17th St., Phila. 3, Pa.

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General Superintendent. To take over our field forces. We are looking for a man that can supervise foreman and superintendents as well as train new men. Our work is in the heavy engineering work, sewerage and water treatment plus several missile contracts. Location: Midwest. P-2840, Engineering News-Record.

(Continued on opposite page)

• POSITIONS VACANT

(Continued from opposite page)

Sales Representatives: Topographic mapping surveying and sales experience desired—American Air Surveys, 907 Penn Ave., Pittsburgh 22, Pa.

Traffic Engineers with a P.E. license granted by a state or territory of the United States and two years of professional experience in Traffic Engineering are being offered an opportunity to cooperate in a nationwide New York State civil service written examination on November 21 for the competitive position of Senior Civil Engineer (Traffic) in the State Department of Taxation and Finance in Albany, N.Y. Salary from $7818 to $9408 in five annual increases. For detailed announcements and applications write to Box 11, Recruitment Unit, New York State Department of Civil Service, The State Campus, Albany 1, N.Y.

Office Engineer. We are interested in a man to do Quantity Take-off and to take some of the paper work and general office work off the managers hands. Location: Midwest. P-2816, Engineering News-Record.

Wanted: Civil Engineers and drafting personnel to do street and sewer design. Apply stating minimum salary to Personnel Department, City Hall, Springfield, Missouri.

Engineers—Wanted by New York State Department of Civil Service to prepare and rate engineering examinations. Vacancies exist in Albany for Senior Engineering Examiner $6410 to $7760 and Associate Engineering Examiner $7818 to $9408. Nationwide written tests on December 12, 1959 for qualified citizens of the United States. If eligible candidates may compete in both tests. Candidates must have a B.S. degree in Civil Engineering and two years of experience in professional engineering, or preparing and rating engineering examinations or teaching engineering subjects in a recognized college, or a combination of the above. For the Associate position candidates must have one additional year of the above experience and a New York State professional engineer's license. Non-residents of the State must have a professional engineer's license recognized as equivalent to the New York State license from the state or territory of the United States in which they live or have place of business. For detailed announcements and application blanks write to Box 12, Recruitment Unit, New York State Department of Civil Service, State Campus, Albany 1, N.Y.

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Construction Manager; Wide experience in general contracting field as general supt., job supt. Thoroughly familiar with office and field methods and procedure. Available soon. PW-2708, Engineering News-Record.

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1	27" WF 177	39'
3	27" WF 145	36'
5	27" WF 145	30'
2	26" WF 151	37'
3	20" I 85	31'
21	18" I 54.7	20'-23'
1	18" I 54.7	35'
7	18" WF 50	20'-23'
6	18" WF 50	17'-19'
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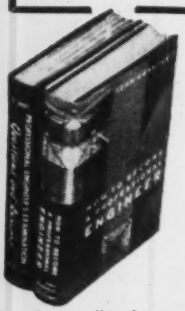

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A Different Concept

RADIO TELESCOPES—a brand new breed of structures (see p 40)—are so large, must move with such precision and must resist deflection so completely that a special concept governs their design. This is the concept of designing for strains more particularly than for stresses.

Designing to eliminate all but the minutest deflections is not, of course, entirely new. Recently built synchrotrons similarly must retain their dimensions precisely, even as their loadings change radically. But the requirements surrounding radio telescope design are extreme. Consider simply the fact that the big metal dishes must retain shape even as they turn to face the sun after having had their backs absorbing its heat for a time.

The tolerances for strain in the big radio telescopes are for some reason a carefully guarded secret. But they must be unprecedentedly small, which makes the strain-design concept a difficult one to follow. How successful the designers have been can probably not be known until the huge space-probing structures go into action.

Help Needed on Foreign Jobs

U.S. ENGINEERS AND CONTRACTORS have not been receiving enough cooperation from our government in getting and carrying out contracts overseas. Compounding their difficulties is the multiplicity of financing agencies that originate and administer the projects—ICA, IFA, World Bank, Ex-Im Bank, Department of Defense and now a proposed new one, the International Development Association.

The point is that the process of getting engineering assignments and construction contracts in foreign countries is becoming progressively more complicated. Inevitably, the conclusion emerges that firms unwilling to master the intricacies of the process and unable to adjust quickly to sudden changes in procedures should be wary of entering the foreign field.

A contrary conclusion, however, is much more important: American engineering and construction firms must have help in overcoming the difficulties inherent in operating abroad if the U.S. is to maintain its position of world leadership and secure its share of world trade.

Unfortunately, neither the ICA nor the Department of Defense has shown the concern over this problem that would seem warranted. Far too often their rules for awarding contracts penalize American firms in competition with foreign companies. Other rules mitigate against using U.S. personnel on contracts that American firms do get. These and other obstacles placed in the way of more effective and efficient use of U.S. construction forces and know-how overseas are so clearly not in the national interest that a new look at our foreign aid philosophy is badly needed.

Congress began to take such a look in some of the debate on the foreign aid bill this summer. It should look some more, because too much of our foreign aid money is being spent with no commensurate economic return to this country. One way to get more return is for U.S. engineering and construction firms to do more of the foreign work that is financed with U.S. tax dollars. Principally, this is work administered under our foreign aid program, but it also includes work originating in the World Bank and other international agencies in which the U.S. has a majority interest.

Plenty of U.S. firms are willing to work abroad. They are, moreover, sure-footed and quick-witted enough to cope with the difficulties. But they need help and encouragement from our own government. Right now they are getting precious little of either.

The Unrelaxed Russians

PREMIER KHRUSHCHEV passed up few opportunities in his speeches to us to plug for a greater exchange of information, goods and people between our two countries. He said this would relax international tension. We agree that it would and suggest that he could set a fine example by instituting some relaxing at home, particularly in the realm of information.

Getting information from the unrelaxed Russians is not easy, as a recent memo from our Moscow correspondent shows. He writes, "You asked whether highways, dams, etc. are classified information in Russia. The answer is yes. However, they often print stories in the Soviet press about such projects, and we correspondents are entitled to pick up that information (if we write a note to the censor, whom we never see, saying where we got the facts).

"Sometimes we are invited on a kind of junket to see, first-hand, some factory, research center or building project. We got out to Kuibyshev that way, but there've been no such trips on ENR-type stories for a long time.

"When we want information that has not appeared in the Soviet press or has not been released at a press conference, we request in writing an interview or some sort of field trip. Chances are about one out of 200, I'd say, for any success at all. This generally restricts us, then, to just about what appears in Tass, Pravda, Izvestia, Komsomolskaya Pravda, etc. So, the status of my various ENR assignments is that they are 'in' and 'under consideration' by the authorities. Meantime, I keep an eye peeled on the newspapers."

After reading this memo our admittedly prejudiced view is that relaxed restrictions on news gathering in the USSR would be a useful step in advancing Mr. Khrushchev's thesis on international tension. Hopefully, therefore, we await the time when he can give his relaxed attention to its implementation.

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